TRAIL AIR QUALITY

A Compilation and Synopsis of Ambient Air Quality and Industrial Emissions Data 1975 - 1985

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Ministry of Environment and Parks

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1975 - 1985

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EXECUTIVE SUMMARY

This report has been prepared by the British Columbia Ministry of Environment, Kootenay Regional Operations, to present air quality data gathered in Trail, B.C. during the period 1975-85. It discusses long term trends, or the abscence thereof, and where possible correlates these to Cominco Ltd.'s operations in the vicinity.

Cominco Ltd. has recently modernized its zinc operations at Trail, including completing an award winning sulphur gas handling system. Minimal modernization of the lead operations has been done to date, although a new materials feed plant and continuous drossing furnace have been completed. Cominco Ltd. is operating under a Ministerial Variance Order which specifies discharge limits in excess of its Waste Management Permit levels. This variance is in effect until 1988.

Under normal conditions industrial emissions from the Cominco Ltd. plants are dispersed without immediate adverse effects on the local environment. However, local weather conditions can severely restrict the dispersive capability of the Trail area receiving environment resulting in accumulations of pollutants.

This report presents data from ten air monitoring sites. One station, Butler Park, is operated by the Ministry of Environment and the others are operated by Cominco Ltd.

The data show no obvious long term trends in ambient suspended particulate parameters over the study period, although there has been a general decrease since 1983. There is some seasonality of the data with levels generally increasing during the winter. This seasonality is strongest at the Oasis station, and is more pronounced with particulate metals than with total suspended particulate. The West Kootenay Power and Light building station has the highest overall levels.

Total suspended particulate levels measured in Trail are comparable with an industrial area in Vancouver and higher than a Vancouver residential area. Particulate lead levels are 1.5 times those of both Vancouver sites and particulate zinc levels are 10 times those of both Vancouver sites. The levels measured in Trail are below or comparable to the provincial environmental objectives for residential areas.

There are unanswered questions regarding the reliability of the Trail dustfall data. The Cominco Ltd. modernization projects completed to date should have contributed to a decrease in ambient dustfall.

Ambient fluoride levels were reduced by the installation of the refinery scrubber. Fluoride levels in Trail compare favourably with the provincial environmental objectives.

The refinery scrubber operation has also reduced the ambient levels of total arsenic. This reduction took place after the reduction of fluorides. The delay is attributed to further work that was required to fine tune the scrubbing operation.

Sulphur dioxide levels are generally maintained in compliance with permit levels although some stations, notably Oasis, are subject to excursions above these levels due to adverse weather conditions.

Emission data indicate that most of the particulate emissions from the Cominco Ltd. operations originate from the lead smelter. The installation of new smelting technology should reduce these emissions. Emission data is inadequate to develop a concise emission/ambient air quality relationship.

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1975 - 1985

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This report has been prepared by the British Columbia Ministry of Environment, Kootenay Regional Operations, to present air quality data gathered in Trail, B.C. during the period 1975-85 in a single, readily accessible document. This information will be of use to regulatory agencies, public groups and companies concerned with air quality in Trail. This report follows the Kootenay Air and Water Quality Study Phase I, Air Quality in Region C, the Nelson-Castlegar-Trail Area, completed in 1977.

The purpose of gathering ambient air quality data is to establish long term trends in the quality of the environment and to establish a data base with which to assess the effects of industrial operations on the environment. The aspects of air quality examined in this report are total suspended particulate, suspended particulate metals, dustfall, fluorides and sulphur oxides. Where possible, changes which have occurred in the recorded levels of these pollutants in the environment of Trail are correlated to changes in the operation of the Cominco Ltd. smelting complex.

Stack emission data are obtained as an indicator of properly functioning industrial operations. Stack emission data also have some enforcement ramifications, since the discharge permits under which Cominco Ltd. operates specify allowable discharge volume and quality limits for most emission sources. These permits also specify ambient gaseous sulphur dioxide (SO_2) limits which are not to be exceeded.

To aid the reader in understanding the significance of the data, its presentation is preceded by some discussion of the processes utilized by Cominco Ltd., the resulting emissions and the general behaviour of industrial emissions in the atmosphere within the context of the Trail situation.

INTRODUCTION

Trail has always been an industrial town. It traces its beginnings to the first claims filed for the Red Mountain ore body in 1890. The first gold/copper smelter was in operation in 1896. The development of the electrolytic processes used today for lead and zinc production were completed in 1916 and the lead/zinc complex was expanded to its current size in the 1920's. In 1928 an International Joint Commission investigated Cominco Ltd.'s responsiblity for the impact of sulphur dioxide emissions on the agricultural activities of Washington State. This led directly to the development of the Warfield fertilizer complex, completed in 1931. This complex utilizes the previously emitted sulphur dioxide.

Throughout its history, as a direct result of Cominco Ltd.'s operations, Trail has had a stable and generally expanding economy. The concentrates processed in Cominco Ltd.'s Trail operations have come from many local and non-local sources. They include the Sullivan Mine at Kimberley, which was and is a major source, and the Pine Point mine on Great Slave Lake, N.W.T. In addition, concentrates are purchased on the world market. This diversity has resulted in a continuity of supply, operations and employment which in turn has resulted in a stable community in and around Trail. The steady demand for lead, zinc and silver has, until recently, meant that Trail has been insulated from the effects of major historical recessions. Cominco is the major economic influence in the Trail/Rossland area, and to an only slightly lesser degree, in the Kootenays.

COMINCO LTD. TRAIL OPERATIONS

This section introduces the major sources of emissions, within the context of the whole operation. These are only the major sources, but there are numerous smaller emission points and sources of fugitive dust, e.g. dust generated from external concentrate handling, throughout the complex.

The major emission points in Cominco's Trail operations are as follows:

- the sinter plant stack,
- the lead baghouse stack,
- the slag fuming furnace baghouse stack,
- the wet mix dryer impinger stack and
- the main zinc stack.

Their placement in Cominco's operations is discussed below.

It must be appreciated that Cominco Ltd.'s Trail plants are fully integrated. The residues from one part of the process are often the feed requirements for another.

Lead Operations

The current lead smelter produces about 550 tonnes/day of refined lead.

Lead concentrate, zinc plant residue and other feed requirements are blended in the feed preparation plant. Exhaust gases from the wet mix dryer exit through an impinger and stack - the wet mix dryer stack. This feed is then burned on a moving grate combustor, known as a downdraft sinter machine, to remove sulphur and produce a coke-like sinter for the next step in the process.

Off gas from the sinter machines contains SO_2 and particulate material. These gases are treated in a humidification tower, an electrostatic precipitator and an ammonia absorption tower and are vented through the sinter plant stack after these treatments.

Sinter is conveyed to the blast furnace, mixed with coke and scrap lead, and melted. This is the classic smelting procedure that processes the sinter into lead bullion and slag. The bullion is transferred to the continuous drossing furnace where usable impurities, e.g. copper, are removed. Off gases from both of these processes are treated in a baghouse and vented through the lead baghouse stack. The bullion is cast into plates, and tranferred to the lead refinery for electrolytic

purification. The residues from the electrolysis process are further refined to recover gold and silver. Off gas from the refinery area is treated by a wet scrubber/baghouse system and vented through the refinery scrubber stack.

A baghouse is a facility which filters dry gases through a fine mesh fabric bag. These facilities are capable of removing particulate material of greater than 10 microns size while allowing a continuous high volume gas flow.

Slag from the blast furnaces contains an appreciable amount of zinc as a result of processing zinc plant residues. This slag is processed in the slag fuming furnaces to produce zinc oxide fume. The fume is captured as a white dust using a large baghouse. The zinc is subsequently recovered at the leaching plant. Off gases from this process are vented through the slag fuming furnace baghouse stack.

The tail slag is granulated using high pressure water sprays producing an inert black sand which is then discharged to the Columbia River.

Zinc Operations

Cominco Ltd.'s zinc operations can produce in excess of 1000 tonnes/day of product zinc.

Concentrates are blended and roasted in three large roasters converting the "sulphide" ore to an "oxide" calcine. This process results in considerable SO_2 formation. The roaster gases are passed through waste heat boilers, electrostatic precipitators, wet scrubbers, a mercury removal facility and the sulphuric acid plant. Most of the SO_2 is converted to sulphuric acid and any residual SO_2 is removed by absorption with ammonia to form ammonium bisulphite. The final scrubbing of the roaster off gas is by "Brink Smoke Eliminator" prior to discharge through the main zinc stack.

The zinc calcine is dissolved in sulphuric acid, a product of the acid plant, at the leaching plant. This solution undergoes some purification and is the feed for the electrolytic refining process. Zinc is electrically plated out of the solution in the electrolytic and melting plant and the resultant plates of pure zinc are melted and cast into various market shapes. Off gases from the melting process are cleaned in a large baghouse. Residues from the zinc leaching plant are transferred to the lead smelter for lead and second pass zinc recovery.

In addition a small plant produces cadmium in market quantities.

Fertilizer Operations

The basic feedstock for all nitrogen based fertilizers is ammonia. At Trail, ammonia is produced using a natural gas synthesis plant and is used as feed for the fertilizer plants, sold as liquid or aqueous ammonia and used in the SO_2 scrubbing systems in the metallurgical plants.

In the phosphate plant sulphuric acid is contacted with phosphate rock from mines in Montana, U.S.A., to produce phosphoric acid. This contact generates considerable heat and releases fluorides. The resultant gases are treated in a wet scrubber system before being released to the atmosphere. The phosphoric acid is reacted with ammonia to form ammonium phosphate, which is then processed into granular fertilizer. Some of the fluoride gas is captured for the formation of hydrofluorocicilic acid which is used as the electrolyte in the lead refinery. It is also sold as a fluoridating agent for domestic drinking water supplies.

The tail gas SO_2 scrubbing at the metallurgical plants produces ammonium bisulphite solution. This solution is acidified in the acid plants using sulphuric acid forming ammonium sulphate and SO_2 gas. The SO_2 gas is recovered, compressed and sold to the pulp industry as liquid SO_2. The ammonium sulphate is concentrated by evaporation in the

sulphate fertilizer plant. The ammonium sulphate crystallizes out of solution and is sold as fertilizer.

In addition to the fertilizer plants the Warfield complex includes a high purity metals division which produces super pure metals in small quantities for the electronics industry.

The major emission points are the fertilizer dryer stacks in the phosphate and sulphate plants.

MODERNIZATION OF COMINCO LTD. TRAIL OPERATIONS

In 1976 Cominco Ltd. realized that its plants would have to be upgraded to maintain a competitive position in world markets. This upgrading would also reduce the impact of its operations on the local environment.

Most of the effort to date has been directed at zinc operations resulting in major improvements in efficiency, working conditions and emission quality. The planned establishment of new lead smelting technology has been delayed indefinitely due to low metal prices and the financial condition of the company. A brief description of recently completed or planned projects affecting air quality and their implications to emissions follows.

1. Zinc Electrolytic and Melting Plant. This is the largest capital cost item of the modernization program. This complex replaced the old cell rooms and zinc melting plant with a "state of the art" integrated and highly mechanized process. Discharges to the atmosphere are considerably reduced by the use of baghouses and working conditions were much improved through better control of acid mist.
   Completion date: late 1983.

2. Zinc Pressure Leaching. Cominco has commissioned the first truly hydrometallurgical process for zinc leaching thus bypassing the roasting stage for sulpur removal. No SO_2 gas is evolved and all sulphur is

recovered as elemental sulphur which is a marketable product. This process has been highly successful economically and there are no significant air discharges from this plant. This plant has allowed increased zinc production without increasing the load on the zinc roasters or the sulphur gas handling system.
Completion date: early 1981

Note: This plant only processes uniform concentrate from the Sullivan Mine. Concentrates of variable or mixed grades can be processed more effectively by the roasting process.

3. Zinc Fume Leach. Zinc oxide fume is a product of the slag fuming furnace in the lead smelter. Prior to the construction of this plant the fume, due to elevated halogen levels, was collected in a baghouse and transferred to a separate leaching facility. The new plant leaches fluorine and chlorine from the fume and discharges these halogens, in environmentally acceptable quantities, to the Columbia River. The fume slurry is pumped to the sulphide leach plant for second pass zinc recovery, thus resolving a very dusty materials handling problem and improving working conditions in that area.
Completion date: mid 1983

4. Sulphur Gas Handling. This project entails the treatment of the off gas from the zinc roasters for use in the acid plants. A major portion of this project was the installation of a mercury scrubber to remove mercury from the zinc roaster gas prior to the sulphuric acid plants. New venturi scrubbers were also installed prior to the electrostatic precipitators to remove most of the particulate from the gas stream. A new ammonia absorption plant, incorporating two complete parallel scrubbing systems, was built to replace an outdated facility. As a result of these improvements, the SO_2 concentration in the zinc roaster stack has been reduced to less than one half of its

previous levels. An additional benefit is the "decreased down time" of the Brinks Smoke Eliminator. This plant was modernized and sized in anticipation of handling the additional load of sulphurous gases from the future lead smelter.
Completion date: late 1983

5. Lead Smelter Feed Plant. This plant provides an organized storage and feed preparation plant for the lead smelter. It has resolved a serious worker hygiene problem and reduced airborne dust.
Completion date: mid 1979

6. Lead Refinery Scrubber. During the remelting of cathode lead and dross treatment at the refinery considerable emissions of fluorine, arsenic and antimony are generated. In 1978 a wet scrubber system was designed and installed to reduce these emissions to acceptable levels.
Completion date: mid 1978

7. Lead Smelter. This is the final phase of the modernization program. Existing lead smelting technology results in unacceptable emissions due to the large volume, low SO_2 strength gas that must be treated for both particulate and SO_2 recovery. In addition, current technology results in unacceptable hygiene conditions for workers in the smelter. The company is planning the installation of newly developed oxygen smelting furnace technology designed to produce a low volume, high strength SO_2 off gas which could be treated in the existing sulphur gas handling system. At the time of writing, the company is engaged in discussions with the federal and provincial governments to reach agreementss allowing the construction of the new smelter.

INDUSTRIAL EMISSIONS

This section will present some general information about the air quality parameters, emissions and the relevant removal mechanisms, considered in this report.

In urban/industrial situations it is very difficult to relate the ambient air quality of the environment to a particular emission source. This results from the nature of most contaminants and their behaviour in the atmosphere. It is compounded by the fact that there are often multiple sources of most contaminants.

For example, suspended particulate is defined as any airborne solid particle of a specific size range, and the sources of such particles can be any of a number of industrial emissions, car exhaust, road dust, the entrainment of soil particles by wind and so on. Once in the atmosphere particles are carried by wind. Air masses mix so that at any specific time any contaminants measured at one site could come from several emission sources or a single source. This relationship will be changing continuously, depending on the level of activity in the community and the weather conditions.

Emissions of unusual contaminants by specialized industrial operations have a more direct relationship to ambient levels of these contaminants in the atmosphere. However it is often the more non-specific contaminants such as total suspended particulate or dustfall which are of concern. In these cases the relative contribution of any targeted industrial emissions to that of other sources must be calculated before drawing any conclusions. The logistics of identifying each possible source and quantifying its contribution quickly become prohibitive. It is very difficult to demonstrate scientifically, and ultimately legally, that any specific source is responsible for the measured ambient levels of a contaminant.

Considering the volume of emissions from the Cominco Ltd. operations and the lack of other comparable sources in

the area, common sense dictates that the ambient air quality of the Trail area must be a result of, or at least very strongly influenced by, the emissions of the Cominco Ltd. plants. However the preceding discussion should be borne in mind when drawing conclusions regarding the possible effects, or lack thereof, of specific changes within the Cominco Ltd. operations.

What follows is a short discussion of each of the air borne pollutants discussed in this report. The effects, behaviour and sources of each are presented.

Dustfall

Dustfall is comprised of particles that settle out of the atmosphere under the influence of gravity. They are generally greater then 20 microns in diameter. The zone of greatest impact from a dustfall source is assumed to be within two kilometres of the source.

Dustfall is of concern because of its visibility (dirty cars and buildings), its possible chemical action (contributing to the degradation of exposed surfaces), its effect on vegetation (it physically blocks sunlight and gas exchange by its presence on the leaves) and the possibility of soil contamination by metals. There is concern regarding metal ingestion by herbivores as they forage and on small children who have been known to eat dirt.

The sources of dustfall in Trail are the concentrate handling operations and general external operations at Cominco Ltd., other industrial operations, and road dust.

The mechanisms for its removal from the atmosphere are settling out by gravity and being dispersed by winds greater than 10 kilometres per hour (kmh).

Total Suspended Particulate

These are small particles which can remain aloft for long periods and travel with the air currents (MacGill et al., 1956; US Dep. of Health, Education & Welfare, 1969).

They are of concern for health reasons. Particles in the 0.5 to 10 micron size range are often respirable - they can be drawn into human bronchial and nasal passages and a portion can be drawn into the lungs.

High levels of total suspended particulate matter in the air will produce a visible haze, affecting the amount of sunlight reaching the ground.

Each particle may form a condensation nucleus, leading to increased fog and mist formation under suitable atmospheric conditions. In turn, each particle provides a surface for reactions between chemically reactive emissions and atmospheric gases, for example, the conversion of sulphur dioxide to various sulphur acids. Such chemical activity would contribute to the degradation of any surfaces with which these oarticles make contact.

The sources of total suspended particulate in Trail are the Cominco Ltd. operations, other industrial activities, car exhaust, road dust and re-entrainment of settled particles by the wind.

The mechanisms for its removal from the local atmosphere are:

i- rain-out - the particles form condensation nucleii and are incorporated into raindrops during droplet formation;

ii - washout - the particles are collected by falling precipitation, through contact;

iii - dispersal - being carried out of the area by air movement, and

iv - coagulation - particles will bond together when they make contact in the air, eventually achieving a significant mass and settling out as dustfall.

Fluorides

There are two types of fluoride emissions of concern from Cominco Ltd. operations: gaseous fluorides and particulate fluorides.

Although low levels of fluoride are beneficial to mammalian dental health, high levels are not. Foraging herbivores could ingest particulate fluorides if such fluorides are a component of the dustfall in the area. Gaseous fluorides are directly toxic to some plants.

There are three sources of fluorides within the Cominco Ltd. operations. Particulate fluorides are emitted by the fertilizer plant and gaseous fluorides are emitted by the slag fuming furnace and the lead refinery.

Particulate fluoride will be removed from the atmosphere by the same mechanisms which operate for total suspended particulate. Gaseous fluoride will be precipitated by rain-out, wash-out or dispersion. Data from studies in Kitimat indicate that the removal of hydrogen fluoride by precipitation is very efficient and localized (M. Kotturi, 1983).

Sulphur Oxides

The bulk of the sulphur emissions from the Cominco Ltd. plants are in the form of gaseous sulphur dioxide. In the atmosphere this gas undergoes a chemical oxidation process to sulphur trioxide and various sulphur acids. These acids are the major components of concern in acid rain, which is an international problem.

In 1926, shortly after the first major operations expansion at Trail, there were complaints from the farmers of Washington State about orchard losses and general vegetative deterioration. In 1928 the matter was referred to an International Joint Commission, which ruled that the sulphur emissions from the Trail smelter were the cause of

this deterioration. At this time Cominco Ltd. undertook extensive research into sulphur recovery and use. By 1931 the acid plants and fertilizer production operations were functional. As a result of these changes sulphur emissions were reduced to 30% of pre-1930 levels.

The International Joint Commission specified allowable ambient SO_2 limits to prevent any further damage. There was a preliminary ruling in 1938 which was finalized in 1941.

Other long term effects of sulphur emissions include the deterioration of exposed metallic surfaces and many building materials, and there are also local, short term concerns. High concentrations of SO_2 are toxic to plants and under some atmospheric conditions levels have been recorded which would result in some damage to sensitive vegetation. SO_2 also has a very characteristic taste/odour when present in significant levels in the atmosphere.

The acid formation resulting from SO_2 emissions and its ingestion into human lungs is a health concern for people with respiratory weaknesses.

Currently, the main source of sulphurous emissions in Trail is the stacks of the lead plant. Cominco Ltd. has been awarded the 1985 Environmental Engineering Design Award for the design and implementation of the sulphur gas handling process installed in the zinc plant. This process does not affect the emissions from the lead stacks.

The natural mechanisms for sulphurous gas removal from the atmosphere are dispersion, rain-out and wash-out.

Summary

Each of the preceding contaminants has a specific particle or molecule size or size range. This will influence its behaviour in the atmosphere. A summary of some of the atmospheric behavioural properties of particles in several size ranges is given in Table 1. Examples of the size ranges of some common substances is given in Fig. 1.

Table 1: Theoretical particle settling velocities, potential time airborne and travel potential

Size	Density	Settling Velocity	Settling Velocity	Time to Fall Stack Height	Travel Potential
microns	gm/cm^3	m/sec	km/h	hr (min)	km (m)
1	5	0.000122	0.0004	277.8	1611.2
	10	0.0003	0.001	113.0	665.4
10	5	0.0122	0.0439	2.78	16.12
	10	0.030	0.01	1.13	6.55
100	5	0.98	3.5	0.0346 (2.1)	0.20 (200)
	10	1.83	6.6	0.0185 (1.1)	0.107 (107)
1000	5	11.58	41.7	0.0029 (0.17)	0.017 (17)
(1 mm)	10	16.76	60.3	0.002 (0.12)	0.012 (12)

Notes:

i- these calculations assume no continued upward motion upon exit from the stack.

ii- travel potential is calculated using the 1975-85 average wind at Cominco Ltd. administration building.

iii- densities (gm/cm^3) pure lead 11.34
lead ore 7.3 - 7.6
cast zinc 6.9 - 7.2
zinc blende 3.9 - 4.2

sources: Perry et al., 1963, Cominco Ltd, 1986

Influence of Physical Geography

Physical geography and climate interact to influence the local weather patterns, and hence, the dispersive capability of the local atmosphere and the effect of industrial emissions on the surrounding environment.

Trail is situated on the banks of the Columbia River, 12 kilometres upstream of the American border (Fig. 2). The elevation of the town and smelter is 400 - 450 metres (m) and the elevation of the surrounding ridges is 1200-1500 m with peaks to 2100-2400 m. The valleys are generally steep sided and tend north/south. The deep valley of the Columbia River provides a channel for the movement of air through this terrain.

CHARACTERISTICS OF PARTICLES AND PARTICLE DISPERSOIDS

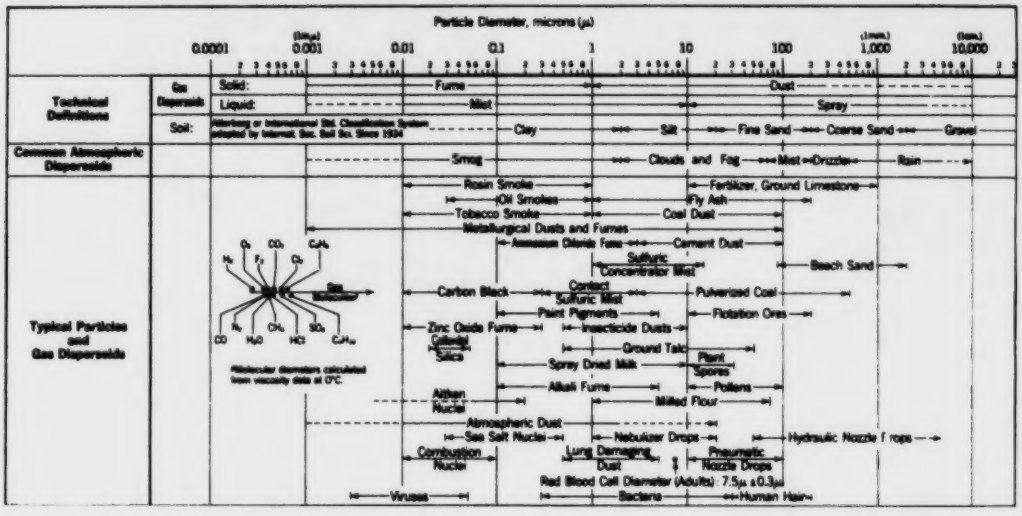

Figure 1 :Sizes of some common substances (from Perry et al., 1963)

The climate of the Columbia region is described as semi-arid with warm summers and cold winters (Chilton, 1981). Total precipitation at Sunningdale is 700mm and increases with elevation (Table 2). Precipitation occurs throughout the year with a maximum in the winter and a minimum in the late summer/early fall. Temperatures vary from an average daily minimum of -8 ^{o}C in January to a average daily maximum of 29 ^{o}C in July.

In the context of air quality - the impact of emissions on the surrounding environment - one of the major controlling factors is the weather. In general, contaminants are removed from the air via wet precipitation (incorportated into rain or snow), dry depostion (falling out of the air or chemically reacting with a grounded surface) or diffusion and dispersion by air movement.

Contaminant removal by precipitation takes two forms. Contaminants are collected when contacted by falling rain or snow and carried to the ground. This mechanism clears both particulate and gaseous pollutants. Also, airborne particulate matter may form condensation nucleii around

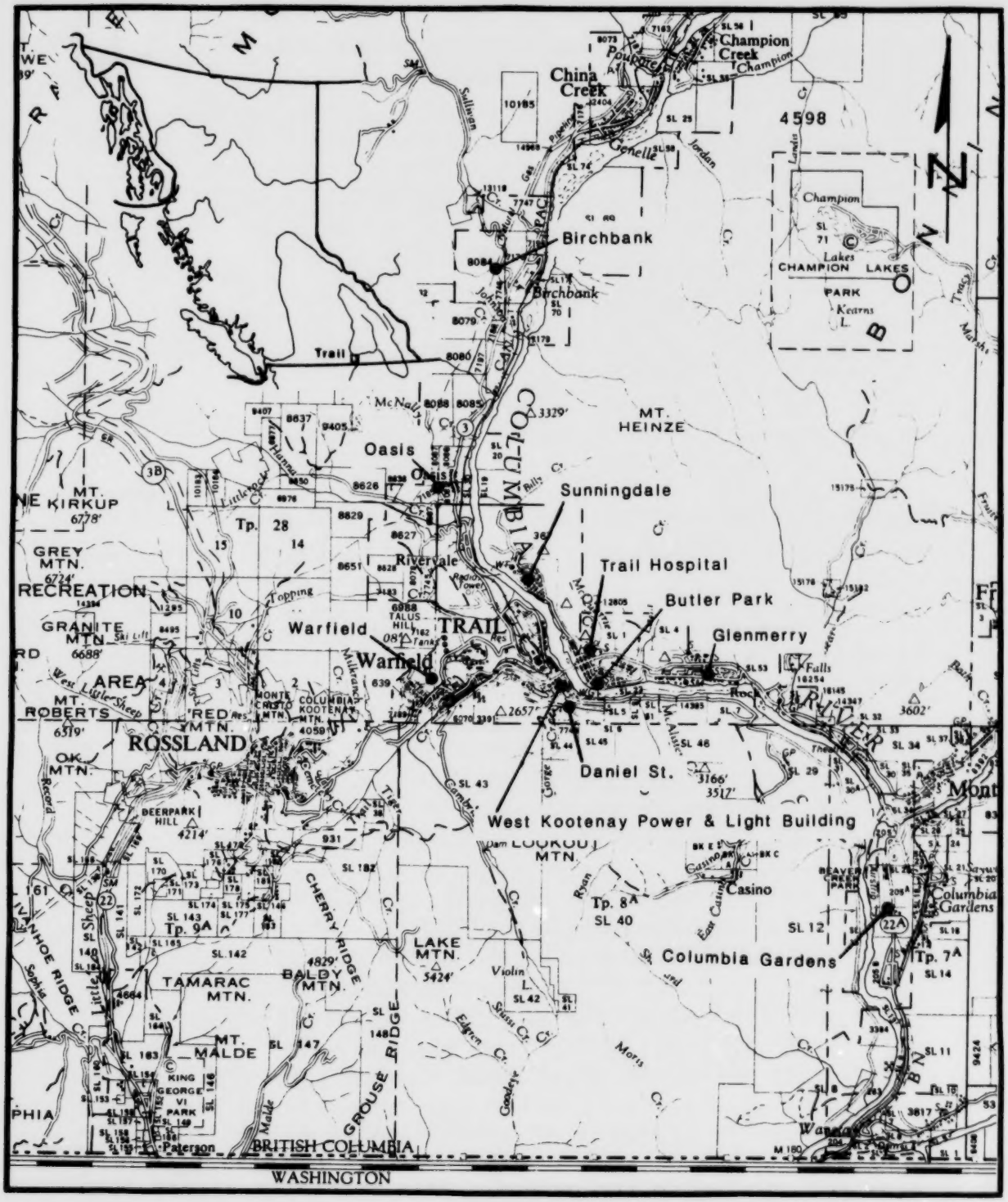

Figure 2 :Trail, B.C.; showing location of air monitoring stations. (Scale - 1:125 000)

Table 2: Normal precipitation and temperature for stations near Trail

Station	Elevation (m)	Total Precipitation (mm) Jan	Feb	Mar	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total
Sunningdale	433	90.7	66.0	57.3	41.0	55.4	55.7	29.6	40.4	37.9	50.5	82.3	96.6	703.4
Warfield	606	97.2	67.2	57.8	43.0	57.0	60.0	29.8	41.3	37.4	51.7	82.1	106.5	731.0
Rossland	1007	111.7	73.2	63.2	50.4	70.5	73.2	35.2	55.3	43.1	62.6	96.7	118.5	853.6
Rossland-MacLean	1085	125.3	88.5	71.4	52.6	73.2	72.1	35.3	48.5	49.4	61.0	102.6	134.5	914.4
		Temperature (^{o}C)												Average
Sunningdale	433	-3.2	0.1	3.6	9.0	13.7	16.9	20.3	19.5	14.8	8.8	2.2	-1.5	8.7
Warfield	606	-3.7	-0.3	3.1	8.6	13.4	17.0	20.8	20.0	15.1	8.4	1.8	-1.9	8.5
Rossland	1007	-5.7	-2.0	0.4	13.4	10.2	13.8	17.6	16.7	12.2	6.0	-0.5	-4.1	5.8
Rossland-MacLean	1085	-6.1	-2.9	-0.2	10.2	10.0	13.6	17.5	16.8	12.1	5.8	-1.2	-4.4	5.5

source: Environment Canada, 1981

which water droplets form. The contaminants are carried to the ground by the resulting precipitation. Gaseous pollutants may condense onto these particles in addition to water vapour.

Diffusion and dispersal result from the movement of air. This movement can result from regional weather, a Pacific storm moving through, or local weather.

The valley geography influences local weather significantly reducing the atmosphere's ability to disperse pollutants. There is a general reduction in wind strength caused by the physical nature of the valley. Winds which occur tend to be channelled within the valley, restricting dispersion to two directions. And there is an increased frequency of atmospheric inversion events, which further isolate the atmosphere in the valley from the upper atmospheric weather.

An inversion is the situation where air temperature increases with elevation. Under normal conditions , the opposite would be true. An inversion restricts the vertical movement of air through the effects of temperature and pressure on volume of a gas. The effect of an inversion is

to isolate the air below the inversion layer from the air above it. Generally surface level winds result from high level regional winds. Therefore, an inversion will produce a calm, stable air mass below it, restricting the dispersive capability of that air mass.

There are two types of inversion formation. A diurnal inversion is formed by the cooling of the ground level atmosphere at night. The evolution of such an inversion is given in Fig. 3. An advection inversion is caused when a warm mass of air overrides a layer of cool air. This situation can occur in Trail during the winter when a warm Pacific storm moves over southern B.C. trapping the existing cool air in the valley.

Inversions can be ground based - the situation shown as "before sunrise" (Fig. 3)- or elevated- "soon after sunrise".

During a ground based inversion the emission plume will rise to an equilibrium level within the inversion and collect. While the inversion is stable these emissions will be held away from ground level. If this inversion breaks up due to the sun heating the ground, as would be the case in a diurnal inversion, a warm air mass will be created at ground level. This is an unstable layer - the mixed layer. When the developing mixed layer reaches the equilibrium elevation of the emission plume there may be a fumigation event, as the collected emissions can now mix to ground level. This gives rise to short intense peaks of contaminant levels.

These inversions will be enhanced by the terrain. At night cool air will tend to flow down the valley sides and pool in the valley bottom (Fig. 4).

The turbulence within moving air mixes pollutants into ever increasing volumes of air resulting in a lessening of polutant concentrations. Turbulence is responsible for pollutant diffusion. The valley location of Trail tends, for a variety of reasons, to result in less intense turbulence and less effective diffusion of pollutants.

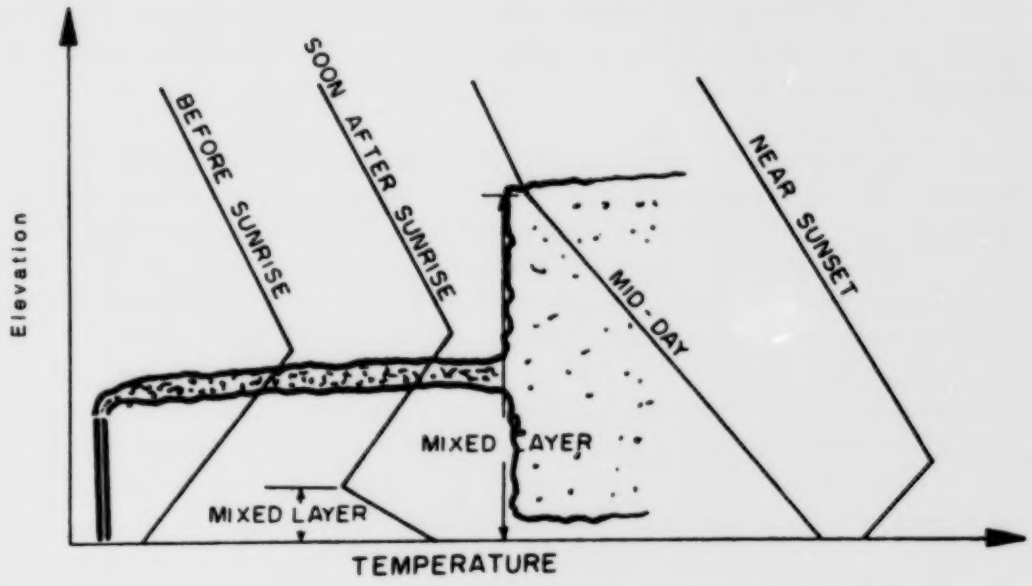

Figure 3 :A representation of temperature distribution at several times during the day (from Atmospheric Environment Service, 1979).

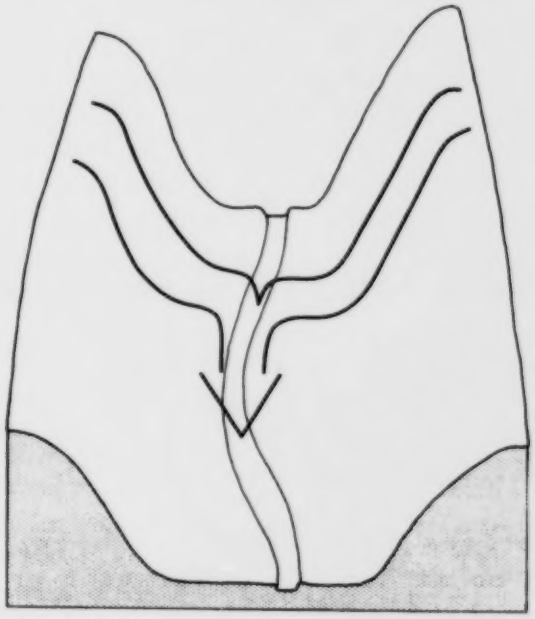

Figure 4 :Nocturnal valley circulation (from Atmospheric Environment Service, 1979)

One source of cross valley circulation is the turbulence resulting from a regional west wind moving across a north/south valley.

Differential heating of the valley walls leads to the generation of cross valley circulation. East facing slopes will heat in the morning and heat the air above them causing it to rise, while the air above the opposite slopes will continue to cool and sink, producing a west/east cross valley flow. There will be a point when both slopes are heated equally and the resulting sink rates are balanced. In the afternoon the situation will be reversed as the west facing slopes collect more heat. This type of cycle will be modified continuously by such factors as the strength or absence of cloud cover and regional winds.

Local winds are also strongly influenced by the terrain. In Trail winds predominantly blow up or down the valley (Fig. 5). This results in pollutants being transported predominantly up and down the valley.

While the preceding discussion describes some of the local meteorlogical features of the Trail area that influence the dispersion of pollutants, the overall weather situation is exceedingly complex. That makes it very difficult to accurately predict the behaviour of the area's emission plumes, which are so influenced by such factors as wind circulation and temperature inversions.

ENVIRONMENTAL OBJECTIVES/DISCHARGE PERMITS

The Ministry of Environment has published "Pollution Control Objectives for the Mining, Smelting and Related Industries of British Columbia 1979." The objectives of relevance to Trail are presented in Table 3.

These objectives are guidelines only, and are not legally binding on either the government or any company. The regulatory control mechanism to control ambient air

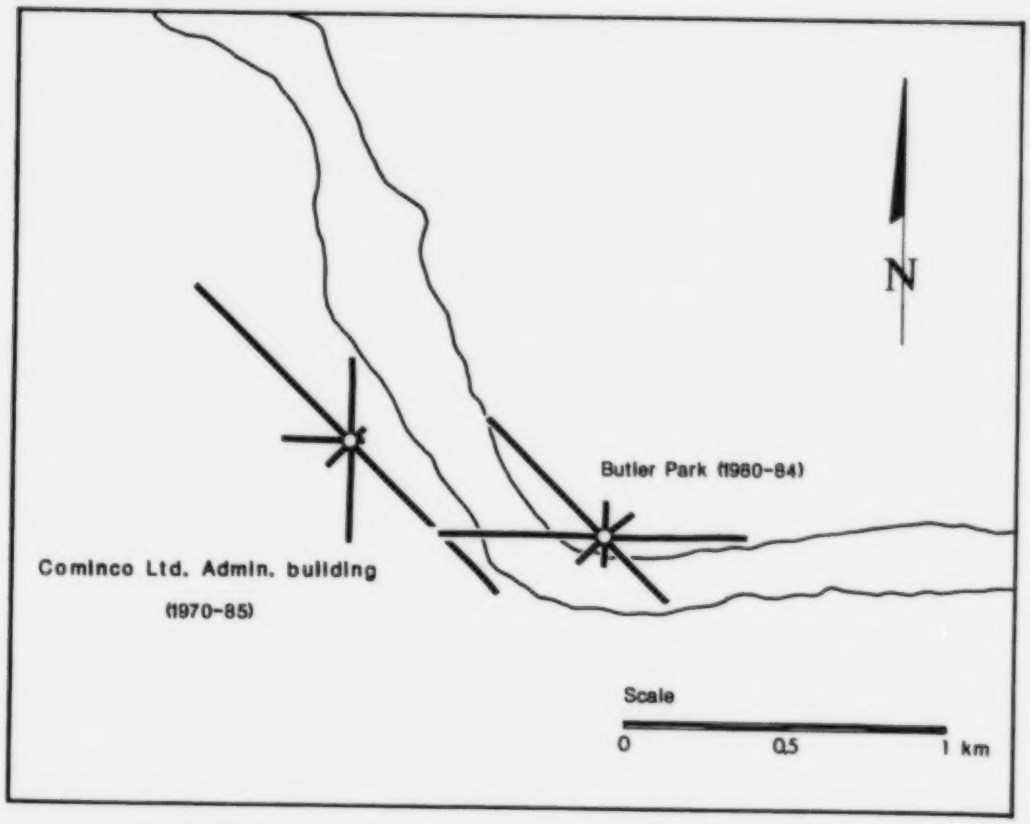

Figure 5 :Average wind roses showing relative occurrence by direction for Cominco Ltd. administration building* and Butler Park.

* national weather station - Trail Tadanac (1148214)
Note: the figures in brackets indicate the period of record

quality is a permit issued under the authority of the Waste Management Act. This is a legal document specific to the operation in question which identifies all emission points, designates discharge volumes and discharge quality for each, and sets out any discharge and/or ambient monitoring requirements. Only contaminants which are relevant to the discharging process are specified. The purpose of the specifing contaminant loading levels is to provide acceptable ambient air quality levels. These are established by considering the discharge volume, the

Table 3: Ambient air control objectives

Parameter		Units	Range	
Sulphur Dioxide				
	annual arithmetic mean	ug/m^3	25	75
		(micrograms per cubic metre)		
	24 hour concentration	ug/m^3	160	260
	3 hour concentration	ug/m^3	375	665
	1 hour concentration	ug/m^3	450	900
Dustfall		$mg/dm^2/day$	1.7	2.9
		(milligrams per square decimetre per day)		
Elements				
	Arsenic	ug/m^3	0.1	1.0
	Cadmium	ug/m^3	0.05	0.3
	Copper	ug/m^3	0.25	2.5
	Fluorine	ug/m^3	0.1	2.0
	Lead	ug/m^3	1.0	2.5
	Zinc	ug/m^3	1.0	2.5
Suspended Particulate				
	annual geometric mean	ug/m^3	60	70
	24 hour concentration	ug/m^3	150	200

Note: Element levels include the total gaseous and particulate components.

"Sampling will be in a form and manner over periods of time specified by the Director of Pollution Control." The reporting levels are assumed to be annual geometric means, this is not specified in the reference document.

"The aim of these Objectives is to protect the quality of British Columbia's environment for the benefit of present and future citizens of the Province and Canada. The Objectives provide, firstly, for the use of the environment's assimilative capacity within limits which do not lead to unacceptable conditions and, secondly, for adopting realistic cost-benefit pollution control strategies.

. . . The more stringent values will apply to sensitive environmental situations , the less stringent where it can be shown that unacceptable deleterious changes will not follow. . . ."

Source: Ministry of Environment, 1979

anticipated operating schedule of each stack and the total emissions into the receiving environment.

Exceeding these permit levels means the company may be liable for prosecution. Such prosecution will not normally take place in the event of equipment or operational failure,

provided that the procedures of notification and rectification are followed.

There are three permits covering the Cominco Ltd. complex, PA-2691 - Lead Operations, PA-2692 - Zinc Operations and PA-2690 - Fertilizer Operations.

The Waste Management Act gives the Minister of Environment the authority to issue variance orders to provide temporary relief from the requirements of permits. The variance must specify the requirements and the period of the variance order. Such variance orders are in effect at Cominco Ltd. These documents itemize specific levels of discharge and contaminant loading and are in effect until 1988. The permit and variance specifications of the major Cominco Ltd. stacks are given in Table 4.

Cominco Ltd.'s permits also specify ambient SO_2 levels that are not to be exceeded at any one of the external SO_2 monitors. These are a 3 hour average of 800 ug/m^3 (0.30 parts per million (PPM)), a 24 hour average of 375 ug/m^3 (0.14 PPM) and an annual mean of 80 ug/m3 (0.03 PPM). Cominco Ltd. has established a stepwise procedure of operational shutdowns to meet these levels (Appendix III).

METHODS

Cominco Ltd. is required by the terms of its air discharge permits to maintain and report data from nine monitoring sites in the Trail area. The Ministry of Environment also maintains a similar site at Butler Park. Cominco Ltd. data are collected by the staff of Cominco Ltd.'s environmental control group and laboratory analyses are done at Cominco Ltd.'s facilities at Trail, B.C. Ministry of Environment samples are collected by Kootenay Region Waste Management staff and the laboratory analyses are done by the B.C. Environmental Laboratory, 3650 Westbrook Mall, Vancouver, B.C. The location of the sampling sites is given in Fig. 2 and a summation of the data collected at each site is given in Table 5.

Table 4: Permit and variance discharge and loading limits

Permit Levels	Discharge Volume mol/s (SCFM)		Particulates mg/mol (gr/SCF)		
	Average	Maximum	Total	Lead	Other
Lead Sinter Machine	4000(204000)	4400(225000)	5.5(0.1)	0.275(0.005)	
Lead Blast Furnace and Drossing	6400(325000)	7550(385000)		0.275(0.005)	
Sinter Plant Wet Mix Dryer	1570(80000)	1770(90000)		0.275(0.005)	
Slag Furnace Baghouse	3050(150000)	3550(180000)			Zinc - 0.275(0.005)
Residue Dryer Baghouse	590(30000)	690(35000)	5.5(0.1)	0.165(0.003)	Zinc - 0.165(0.003)
Refinery Scrubber	3000(153000)	3300(168000)	5.5(0.1)	0.165(0.003)	Arsenic - 0.165(0.003)
					Gaseous Fluoride - 0.095(7)
Zinc Roaster	2550(130000)	3650(180000)	5.5(0.1)		
No. 2 Ajax Zinc Melting Furnace	235(12000)	295(15000)			Zinc - 0.275(0.005)
Variance Levels					
Lead Sinter Machine			13.76(0.25)	1.1(0.02)	
Sinter Plant Wet Mix Dryer				1.65(0.03)	
Residue Dryer Baghouse				0.275(0.005)	Zinc - 0.275(0.005)
Refinery Scrubber					Arsenic - 0.33(0.006)
					Gaseous Fluoride - 0.136(10)
No. 2 Ajax Zinc Melting Furnace					Zinc - 0.825(0.015)

Notes:

i) all major stacks and all those under variance are noted here; original permit levels remain in effect unless specifically noted.

ii) permit levels apply to any sample results, whereas variance levels are based on a six month running average of sample values.

iii) gaseous fluoride units are mg/mol (PPM).

Summaries of the collection and analysis methods employed in this program and discussion of some of the pertinent characteristics of the resulting data are presented below.

Table 5: Ambient air monitoring stations in the Trail area

Station	SO_2	Sulphation	Dustfall	Suspended Particulate						Fluoride		Arsenic
		Plate		TSP	Pb	Zn	Cd	As	Cu	Plate	Total	Total
Butler Park	C	M	M	W	W	W	W	W	W	M		
WKP&L Bldg	C	M	M	W	W	W	W			M	W	W
Oasis	C	M	M	W	W	W	W			M	W	W
Warfield Substation	C	M	M	W	W	W	W			M	W	W
Sunningdale		M	M							M		
Glenmerry		M	M							M		
Daniel St.		M	M							M		
Columbia Gardens		M	M							M		
Trail Hospital		M	M							M		
Birchbank		M	M									

Notes:

i) frequency C - continous
W - weekly
M - monthly

ii) SO_2 data reported as 1 hour average readings, 3 hour average readings which are updated hourly, and 24 hour averages.

For more detailed information please refer to the following manuals:

i) McQuaker, N.R. 1983. A Laboratory Manual for the Chemical Analysis of Ambient Air, Emissions, Precipitation, Soil and Vegetation.

ii) McQuaker, N.R. and D.K. Sandberg, 1983. Calibration and Operation of Measurement Systems used in Stationary Source Testing.

iii) McQuaker, N.R., D.K. Sandberg, and D. Pengilly. 1983. Calibration and Operation of Measurement Systems used in Air Quality Monitoring.

iv) McQuaker, N.R., D. Pengilly and E. Haboosheh. 1983. Calibration and Operation of Continuous Ambient Air Monitors.

These manuals are the reference manuals used by the Ministry of Environment in its own collection and analysis methods and when approving permitee methods. They are available for viewing at any B.C. Ministry of Environment Waste Management office.

Some geographic characteristics of each site which could affect the data collected are given in Table 6.

Table 6: Geographical characteristics of air monitoring stations

Station	Distance from Smelter (km)	Elevation of Collection Site (m)	Elevation Relative to Emissions (m)	Height above Ground (m)	Notes
Birchbank	7.0	561	-3	2	rural farm area
Oasis	4.3	549	-15	2	rural residential area
Warfield Substation	2.4	594	30	2	undeveloped area, 100 m from main road
Sunningdale	1.8	442	-122	5	residential area, across valley
WKP&L Bldg	0.6	450	-114	38	highest location in downtown Trail
Butler Park	1.3	411	-153	5	in city park, 80 m from road
Daniel St.	1.1	488	-76	2	residential area 50 m from street
Trail Hospital	1.2	472	-92	38	on roof of hospital, across valley
Glenmerry	3.9	457	-107	2	adjacent to public works yard
Columbia Gardens	10.5	436	-128	2	between airport and highway

Notes on Table 6:

i) the source of emissions was assumed to be centered on the lead sinter machine stack, the zinc roaster stack and the lead blast furnaces and drossing stack for distance determination.

ii) the elevation of emissions was assumed to be the average of the same three stacks:

	ground elevation (m)	stack height (m)	emission elevation (m)	average (m)
lead sinter machine	457	122	579	
zinc roaster	463	122	585	
lead blast furnace & drossing	442	87	529	564

Dustfall

Dustfall data are collected at all monitoring stations.

Dustfall samples are collected monthly using a straight sided open canister, initially half full of water. Anti-freeze is added to this water in the winter and an algicide in the summer. The site is checked as required to prevent the canister from overflowing or going dry. These canisters are set out according to govenment guidelines of clearance and exposure and are left for approximately 30 days. The position of each canister is maintained through consecutive samples at each site.

The siting of the collection canister is critical in this analysis. Such factors as distance from roads and height above the ground can have a significant impact on the levels of dustfall recorded. Ground dust, picked up by the wind, will not carry to any significant heights and therefore stations like Trail Hospital and downtown should be relatively free of its influence. Balanced against this is the downtown site's increased wind canyon effect generated as wind is forced down streets, its proximity to the smelter and its elevation relative to the smelter. All of these factors would tend to increase the collected dustfall levels at the downtown site.

After collection, Cominco Ltd. dries the sample by evaporation and the weight of the residue is used as total dustfall. The Ministry of Environment separates each sample into a soluble and insoluble fraction by filtration. Total dustfall is the sum of both fractions.

Ministry of Environment conducts further analysis for metal content on each fraction using acid digestion followed by analysis in an "inductively coupled plasma atomic emission spectrometer." This entails heating the sample to plasma temperatures and recording the strength and wave lengths of emitted light. Each element will emit light of a

characteristic wave length under these conditions and the amount of light emitted will be proportional to the amount of the element present.

Results are expressed as milligrams per square decimetre per day ($mg/dm^2/day$). All the data presented here have undergone conversion from other units (e.g. tons per square mile per month ($ton/mi^2/month$)) for some portion of the data set.

Suspended Particulate

Suspended particulate samples are collected at Butler Park, West Kootenay Power & Light building, Warfield Substation and Oasis monitoring sites.

Suspended particulate samples are collected by filtering a known volume of air through a pre-weighed filter. The filter head is protected and positioned such that the sampled air must travel upwards before passing through the filter thereby ensuring that the sample is composed of airborne material. After the sample run the filter is re-weighed and the difference is the total suspended particulate. Samples are collected every six days following the National Air Pollution Sampling Network Schedule. The results are presented in micrograms per cubic metre (ug/m^3).

The filter, or a subsample thereof, is then acid digested and analysed for metal content. The Ministry of Environment uses the same procedure as described for dustfall. Cominco Ltd. uses atomic absorption. This technique involves exposing the sample to radiation characteristic to the element in question. The amount of radiation absorbed will be proportional to the amount of that element present.

There are two variations of filtering apparatus employed in this program: a high volume sampler used by

Ministry of Environment, and low volume samplers used by Cominco Ltd. Some of the differences between each type are given below.

	Sample Period (hours)	Flow Rate (l/min)	Sampled Volume (m^3/24 hr)	Filter Area (cm^2)	Pore Size (microns)
High Volume Sampler	24	1132	1630	516	0.3
Low Volume Sampler	24	40	58 (approx)	52	0.8

These differences lead to some significant differences in the data sets, and hence the interpetations which can be drawn from them. Comparative studies of the two methods (Sandberg, 1984; J. McCunn, Cominco Ltd., pers. comm., 1986), have demonstrated a lack of agreement in total suspended particulate results. This is thought to result from experimental error incurred in the process of weighing samples and filters when dealing with the small sample size produced by the low volume equipment. The small sample size will increase the effect of any large particles collected during the sample run, increasing the variability of the data.

These studies have demonstrated good agreement in the analysis of metal content. There is a tendency for the metals analysis results of the low volume samples to duplicate (i.e. produce the same value for lead and zinc content), again due to the small sample size and the analytical limits of the laboratory. The reported figures are not of a consistent value due to variations in other parameters used in volume calculations.

Total Fluoride/Total Arsenic

Total fluoride/total arsenic data are collected at West Kootenay Power & Light building, Warfield Substation and Oasis monitoring sites.

These data are collected using an equipment train similar to that of the low volume sampler, however the sampling head is a Greenburg-Smith impinger rather than a

filter. Impingers operate on the principle that particles moving in an airstream have a greater angular momentum than the air - they can't turn sharp corners. The air stream to be sampled is forced through a small orifice (increasing the air speed) onto a collection surface. Particles are collected as they impact onto the surface, and the air is then bubbled through a scrubbing medium (and NaOH solution) to collect any gaseous material. The flow rate through the sampling train is 3 liters/min and the sample period is one week, giving a total sampled volume of approximately 4.3 m^3.

Sulphation/Fluoridation Plates

Sulphation/fluoridation plate data are collected at all monitoring sites.

These data are collected by exposing plates of collection medium for a period of approximately thirty days. The plates are set out in an inverted position to avoid contamination by particulate matter. The collection media are lead oxide (sulphates) and calcium oxide (fluorides). Reaction and absorption of the gases occurs at the plate surface. The criteria used in siting these plates are those used for siting dustfall canisters. These produce a cumulative measure of gaseous SO_2/SO_3 and gaseous fluorides, mostly HF. The results are expressed in milligrams per square decimetre per day ($mg/dm^2/day$) and micrograms per square centimetre per day ($ug/cm^2/day$), respectively.

Ambient Sulphur Dioxide

Ambient sulphur dioxide data are gathered at Butler Park, West Kootenay Power & Light building, Warfield Substation and Oasis monitoring sites.

Cominco Ltd. and the Ministry of Environment both use pulsed fluorescent continuous SO_2 analysers to measure the instantaneous ambient levels of SO_2 gas. These analysers operate on the principle that SO_2 molecules exposed to ultra-violet radiation emit fluorescent light in amounts

proportional to the amount of SO_2 present. These analysers operate continuously and the results are reported as one half or one hour averages. They are coupled directly to inhouse computers via data loggers and telephone lines. Both systems have internal mechanisms to check recorded zero levels and are manually checked against known concentrations of SO_2. An external audit conducted by Environmental Laboratory staff is done biannually. Cominco Ltd. uses the Monitor Labs Inc. Pulsed Fluorescent SO_2 Analysers Model 8850, and the Ministry of Environment uses the Teco 43 Pulsed Fluorescent SO_2 Analyser.

Emission Sampling

Stack emission data are gathered at stacks as required by Cominco Ltd.'s operating permits. The frequency of sampling and parameters sampled varies from stack to stack. Monthly and quarterly stack emission data are used in this discussion.

Stack discharges are sampled within the stack using integrated isokinetic techniques. Samples are drawn from representative positions across the diameter of the stack at the same rate as the gases are moving in the stack. Following collection, the analyses used are the same as those described for suspended particulate analysis. Sampling period is generally two hours and the sampling schedule is in accordance with permit requirements.

The lead sinter machine stack, the lead blast furnace and drossing stack, the lead slag furnace baghouse stack and the zinc roaster stack are monitored continuously for SO_2 levels. This data is used by Cominco Ltd. personnel to monitor the effect of emission control procedures on SO_2 emissions. This data is stored in the form of hourly averages at the Nelson Ministry of Environment office. Due to the nature and volume of the data and the limited resources available for this study this information has not been used in this report.

The total emission values used in this report have been calculated assuming a constant flow rate and contaminant loading between samples. They have been adjusted to compensate for known shutdowns of greater than 48 hours duration. These figures have been compiled using the data from the major stacks, those sampled monthly or quarterly. No attempt has been made to quantify the emissions from all sources in Cominco Ltd. operations due to this infrequent monitoring.

In the calculations of total discharges from the major stacks used in this report discharge volumes and contaminant loading were assumed to be constant for the period between samples. Discharges occurring during a month of partial shutdown were calculated using the ratio of number of operational days to 30 days. Missing values, during periods of known operations, were replaced with the average of the neighouring values.

RESULTS AND DISCUSSION

Complete data sets are presented in Appendices I (ambient air quality) and II (emission quality).

Total Suspended Particulate

The monthly averages of total suspended particulate levels (Fig. 6) show no obvious long term trends although there is a general decrease in recent years (Table 7). The West Kootenay Power & Light building station records the highest levels and the greatest degree of variability, while Butler Park shows the least variabity of the four sampling stations.

The difference in variability between Butler Park and the other three stations may reflect the difference in the two sampling methods used (high volume sampler at Butler Park and low volume sampler at the others). The small sample size collected by the low volume sampler could be influenced by the presence of a small number of, or even single, large particles collected during a sample run.

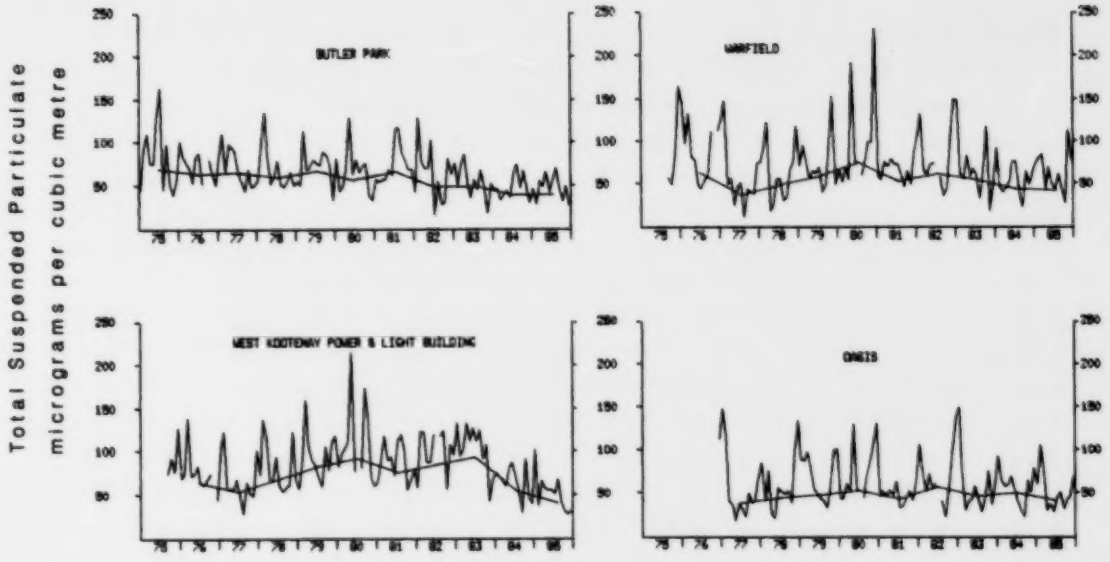

Figure 6 :Graphs of monthly average values and annual geometric means (——) of total suspended particulate for four stations near Trail.

Table 7 :Annual geometric means of total suspended particulate levels for stations in Trail and Greater Vancouver in ug/m^3

	Trail				Vancouver	
Year	Butler Park	WKP&L Bldg.	Warfield Substation	Oasis	English Bluff	Coquitlam Mun. Hall
1971	65 *					
1972	62 *	62 *	55			
1973	68 *	79 **	64 *			
1974	54	58	54			
1975	68.14 *					
1976	63.08 *	64.96 *	60.98 *			
1977	64.96 *	53.87	38.30	38.89		
1978	60.84 *	69.18 *	48.64	45.22		
1979	66.92 *	84.45 **	58.82	47.92		
1980	58.67	92.97 **	74.53 **	53.20		
1981	67.31 *	77.77 **	55.46	43.34	31	68 *
1982	50.67	88.09 **	63.37 *	56.77	29	61 *
1983	50.65	93.89 **	56.32	46.43	23	45
1984	41.95	57.87	47.55	51.03	19	50
1985	43.41	44.44	44.71	43.89	29	64 *

Notes on Table 7:

* exceeds provincial environmental objective of 60 ug/m3

** exceeds provincial environmental objective of 70 ug/m^3

sources: Trail, 1971-74: Ministry of Environment, 1977;
Vancouver: Greater Vancouver Regional District, 1984, 1985, 1986

Trail data were compared with data from two sites near Vancouver: Coquitlam Municipal Hall, in an industrial area, and English Bluff, in a residential area of Tsawwassen. The measured ambient total suspended particulate levels in Trail are comparable with those measured in Coquitlam. This is surprising considering the presence of the world's largest lead/zinc refinery complex in Trail. The levels of total suspended particulate at English Bluff are significantly lower than those measured in Trail. This is not unexpected as English Bluff is well removed from any industrial activity.

Figure 6 also shows a degree of seasonality at Oasis and Warfield, with an increase in measured levels of total suspended particulate during the winter months. This trend is apparent when considering the timing of excursions above the provincial environmental objectives (Table 8).

The West Kootenay Power & Light building station has the highest annual geometric means while the number of excursions is greatest at Warfield. This indicates that the downtown station is under the most direct influence of smelter emissions but that the levels measured at Warfield may be more influenced by dispersion conditions.

The increase in ambient levels during the winter months reflects a deterioration of atmospheric dispersion capability - an increase in the occurrence of inversion conditions. The impact of these conditions at the Oasis and Warfield Substation monitoring stations is exacerbated by gentle upriver winds and the elevation of these stations relative to the emission source.

The particles emitted from metallurgical operations are small (National Research Council of Canada, 1982; US Dept.

Table 8: Annual number of excursions above Provincial Environmental Air Quality Objective Levels of 24 hour concentrations of total suspended particulate for stations in Trail.

The first figure represents all excursions above 150 ug/m^3; The second figure represents excursions above 200 ug/m^3.

Year	Butler Park	WKP&L Bldg.	Warfield Substation	Oasis
1975	7:3	4:2 *	5:2 *	
1976	5:1	3:1	9:6	2:1 *
1977	2:-	5:2	4:2	4:2
1978	1:-	5:1	5:3	4:2
1979	1:-	7:2	4:3	7:3
1980	2:1	7:5	11:5	6:3
1981	3:-	6:1	2:-	-:-
1982	2:1	8:2	8:2	4:1
1983	2:-	6:4	4:2	2:1
1984	-:-	4:-	2:1	2:1
1985	-:-	1:1	4:3	2:-
% occurring during Sept/Mar	56:50	75:83	91:90	94:100

Note: * indicates that the data are incomplete for these years.

of Health, Education & Welfare, 1969; Perry et al., 1963) and have a long potential airborne life. Under poor dispersion conditions they will remain in the area and airborne long enough to collect while under good dispersion conditions they will be blown from the area quickly. Previous atmospheric studies in Trail (MEP, 1977) have indicated an environmental "sink", or atmospheric collection site, in the Oasis area under inversion conditions.

Suspended Particulate Metals

Of the four stations, Oasis shows the greatest seasonality with the ambient levels increasing during the fall/winter months. This seasonality is stronger in the metals analysis than it is in the total suspended particulate (Fig. 7). This increase in seasonality appears

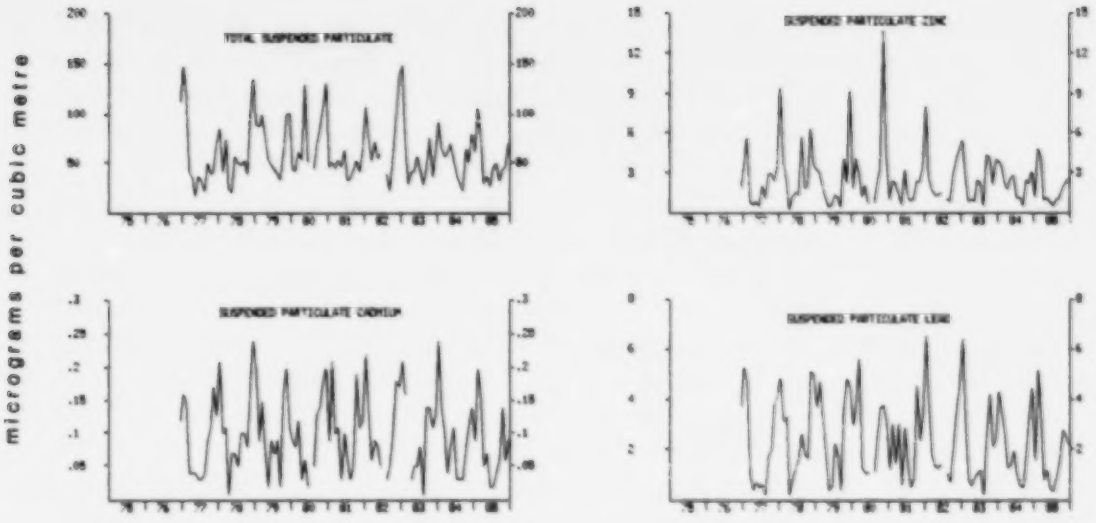

Figure 7 :Monthly average graphs of suspended particulate parameters for the Oasis air monitoring station.

to be due to decreased dispersion by weather, in conjunction with an increased occurrence of gentle upriver winds. This would indicate that the particles reaching Oasis are relatively small. The increase in seasonality with the small particles have a significant metal content. This metals data could indicate that a greater portion of the hypothesis is further substantiated by graphical comparison of the geometric means (Fig. 8).

There is a decrease in the measured level of airborne arsenic in 1980 (Fig. 9). The refinery scrubber is the modernization project which should have reduced arsenic emissions. It was completed in 1978, prior to the decrease. However, it took some time to "fine tune" the scrubbing operation. This decrease is therefore thought to be attributable to the refinery scrubber.

The high airborne arsenic levels recorded at Oasis (1982) and Butler Park (1985) result from a small number of high samples occurring intermittently. As such, they are not indicative of any long term trends in the ambient environment.

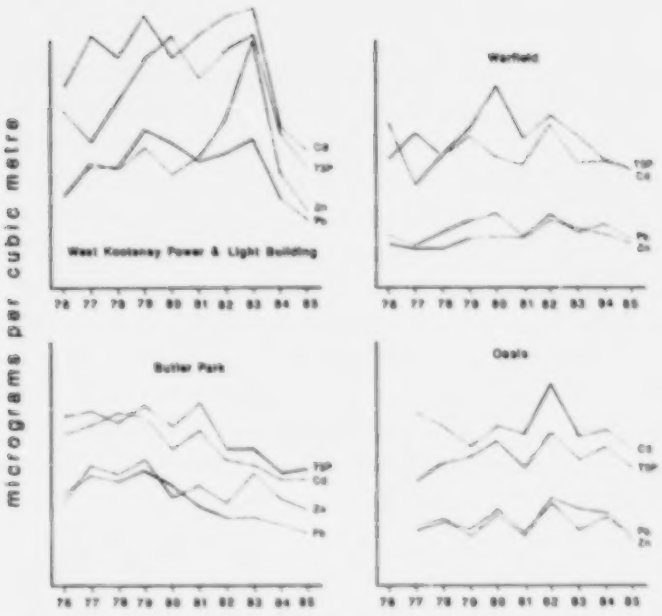

Figure 8 :Graphs showing the trends in relative geometric mean of suspended particulate parameters.
Note: Within each graph parameters are shown at different scales; individual parameter scale is consistent among graphs.

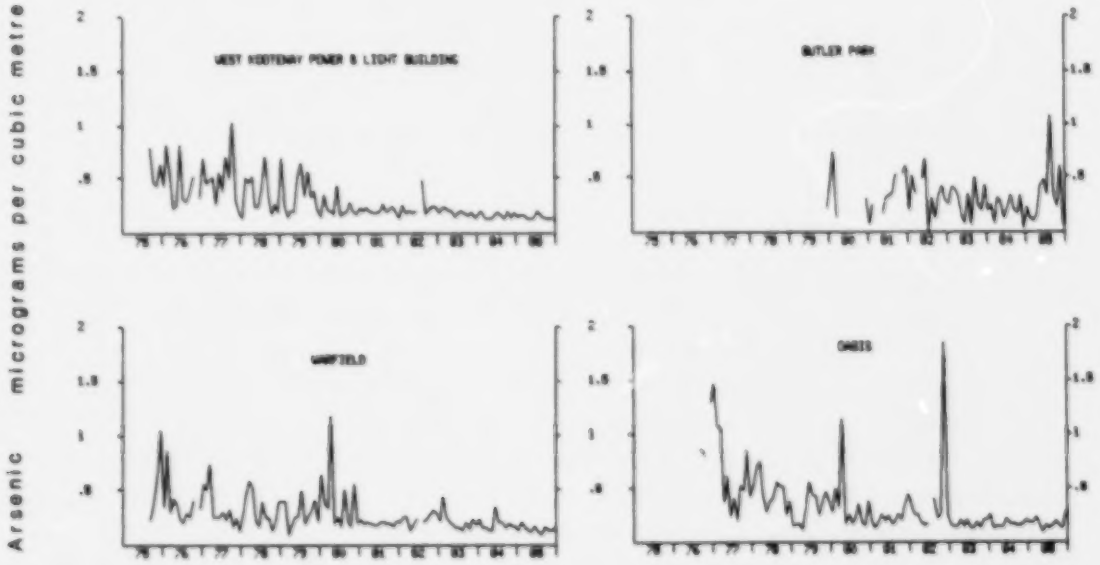

Figure 9 :Monthly average graphs of suspended particulate arsenic at Butler Park and total airborne arsenic at three Cominco Ltd. air monitoring stations.

Comparison of the levels of suspended particulate lead for Trail and Vancouver (Table 9) shows that the levels measured in Trail are approximately double those of Vancouver. The Vancouver data show a consistent decrease through the study period, which is attributed to the decrease in the use of leaded gasoline in automobile fuel (Environment Canada, 1985). The Trail data do not show such a consistent decrease although there is a general decrease in 1984-85. Butler Park shows a consistent decrease from 1979 to the present but this trend is not found at any of the other stations. Audit studies (D. Sandberg, 1984) have shown good agreement between the two sampling methods for metals analysis, and it is therefore unlikely that this is a relic of sampling or analytical technique.

Table 9 :Annual geometric means of suspended particulate lead levels for stations in Trail and Greater Vancouver in ug/m^3

	Trail				Vancouver	
Year	Butler Park	MKP&L Bldg.	Warfield Substation	Oasis	27 & Ontario	Kitsilano
1972	1.27 *					
1973	2.08 *	2.59 **	1.66 *			
1974	0.89	1.84 *	1.38 *			
1975	1.71 *				0.84	0.91
1976	1.71 *	1.67 *	0.98		0.77	
1977	2.03 *	2.24 *	0.78	1.04 *	0.76	0.72
1978	1.93 *	2.24 *	1.03 *	1.20 *	0.62	0.62
1979	2.14 *	2.91 **	1.24 *	1.05 *	0.55	0.70
1980	1.85 *	2.67 **	1.37 *	1.40 *	0.65	0.66
1981	1.47 *	2.34 *	0.96	0.99	0.68	0.60
1982	1.26 *	2.49 *	1.36 *	1.53 *	0.52	0.45
1983	1.26 *	2.76 **	1.02 *	1.04 *	0.50	0.41
1984	1.13 *	1.66 *	1.19 *	1.27	0.4	0.4
1985	0.98	1.27 *	0.89	0.96		

Notes on Table 9:

* exceeds provincial environmental objective of 1.00 ug/m^3

** exceeds provincial environmental objective of 2.50 ug/m^3

A similar comparison of suspended zinc levels (Table 10) shows that the levels of suspended particulate zinc are an order of magnitude greater in Trail than in Vancouver. This undoubtedly reflects the lack of any significant emission sources of particulate zinc in Vancouver.

Table 10 :Annual geometric means of suspended particulate zinc levels for stations in Trail and Greater Vancouver in ug/m^3.

	Trail				Vancouver	
Year	Butler Park	WKP&L Bldg.	Warfield Substation	Oasis	English Bluff	Coquitlam Mun. Hall
1972	1.16 *					
1973	1.13 *	1.94 *	1.06 *			
1974	0.92	1.54 *	0.88			
1975	1.61 *					
1976	1.55 *	1.70 *	0.82			
1977	2.21 *	2.30 *	0.74	1.04 *		
1978	2.06 *	2.20 *	0.72	1.20 *		
1979	2.34 *	2.58 **	0.92	1.05 *		
1980	1.64 *	2.09 *	0.95	1.40 *		
1981	1.86 *	2.41 *	0.96	0.97	0.03	0.09
1982	1.53 *	3.12 **	1.27 *	1.53 *	0.02	0.07
1983	2.08 *	4.56 **	1.10 *	1.04 *	0.03	0.07
1984	1.60 *	2.13 *	1.00	1.27 *	0.02	0.06
1985	1.42 *	1.43 *	0.83	0.96	0.02	0.05

Notes on Table 10:

* exceeds provincial environmental objective of 1.0 ug/m3

** exceeds provincial environmental objective of 2.5 ug/m^3

Sources: Vancouver, 1981-85; Greater Vancouver Regional District, 1983, 1984, 1985
Trail, 1972-74; Ministry of Environment, 1977

The elevated levels recorded at the downtown Trail station during 1982-83 are thought to result from the phasing out of the old zinc plant (J. McCunn, Cominco Ltd., pers. comm., 1986). Possible reasons for the general decrease in 1984-85 are the use of modern emission control facilities in the new zinc complex, the efforts of Cominco Ltd. personnel to maximize the efficiency of the existing emission control facilities of lead operations and the conversion to moving zinc fume in a slurry.

The geometric means of suspended particulate metal generally follow those of total suspended particulate with the exception of particulate zinc measured at the West Kootenay Power & Light building station and Butler Park in 1983. These anomalies could reflect the increased emissions from the old zinc plant during the time of changeover to the new electrolytic complex. Such particles would be expected to have a high zinc content. There are also recorded high values of zinc in Butler Park dustfall in late 1982.

The recorded levels of suspended particulate lead show some correlation with plant closures (Fig. 10). The levels generally decrease during times of Cominco Ltd. shutdowns however similar decreases also occur during times of full operation. This indicates that the Trail atmosphere is capable of complete dispersion of the Cominco Ltd. emissions under good conditions. However, such conditions occur intermittently.

The ambient air quality/plant operations relationship found in the Kootenay Air and Water Quality Study Phase I, Air Quality in Region C, the Trail-Castlegar-Nelson Area (Ministry of Environment, 1977, Fig. 11) was more pronounced. One possible explanation for this is that in 1974 a June-October strike involved totally shutting down all parts of the refinery/fertilizer complex. By contrast, all the shutdowns occurring through 1975-85 were maintenance shutdowns, generally of only one part of the complex. Hence, during 1975-85, there were always some emissions generated from the complex.

Dustfall

Initial examination of the dustfall results (Fig. 12) shows a general decrease in measured dustfall levels. However, closer examination shows a change in the character of dustfall data during 1980. This change is a general decrease in quantity measured and a noticeable decrease in variability. This is most noticeable at West Kootenay Power & Light building and Warfield stations but is not present at the Butler Park station.

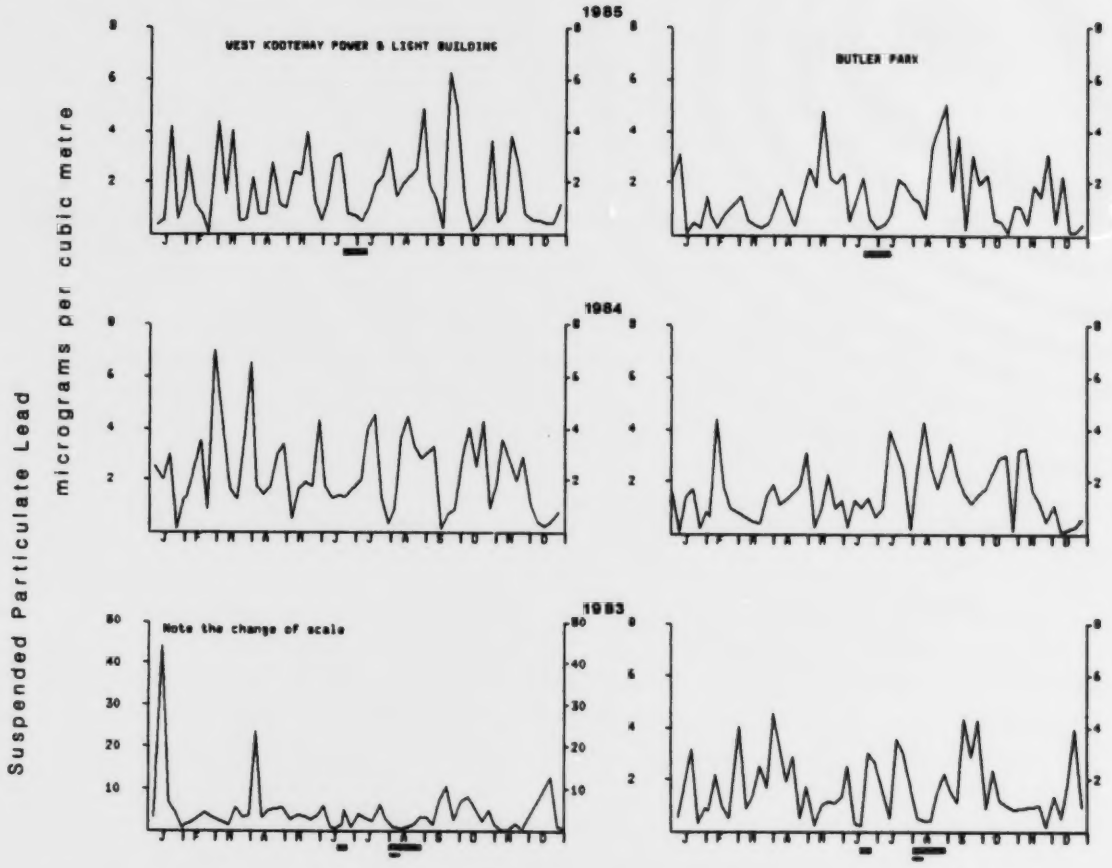

Figure 10 :Graphs of suspended particulate lead measurements at Butler Park and West Kootenay Power & Light building showing periods of lead(———) and zinc (——) operations shut-down.

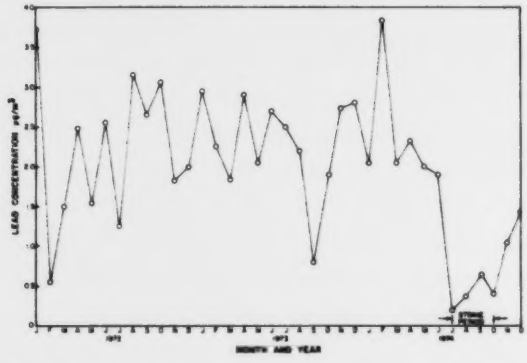

Figure 11 :Monthly average graph of suspended particulate lead for 1971-74 at Butler Park (Ministry of Environment, 1977).

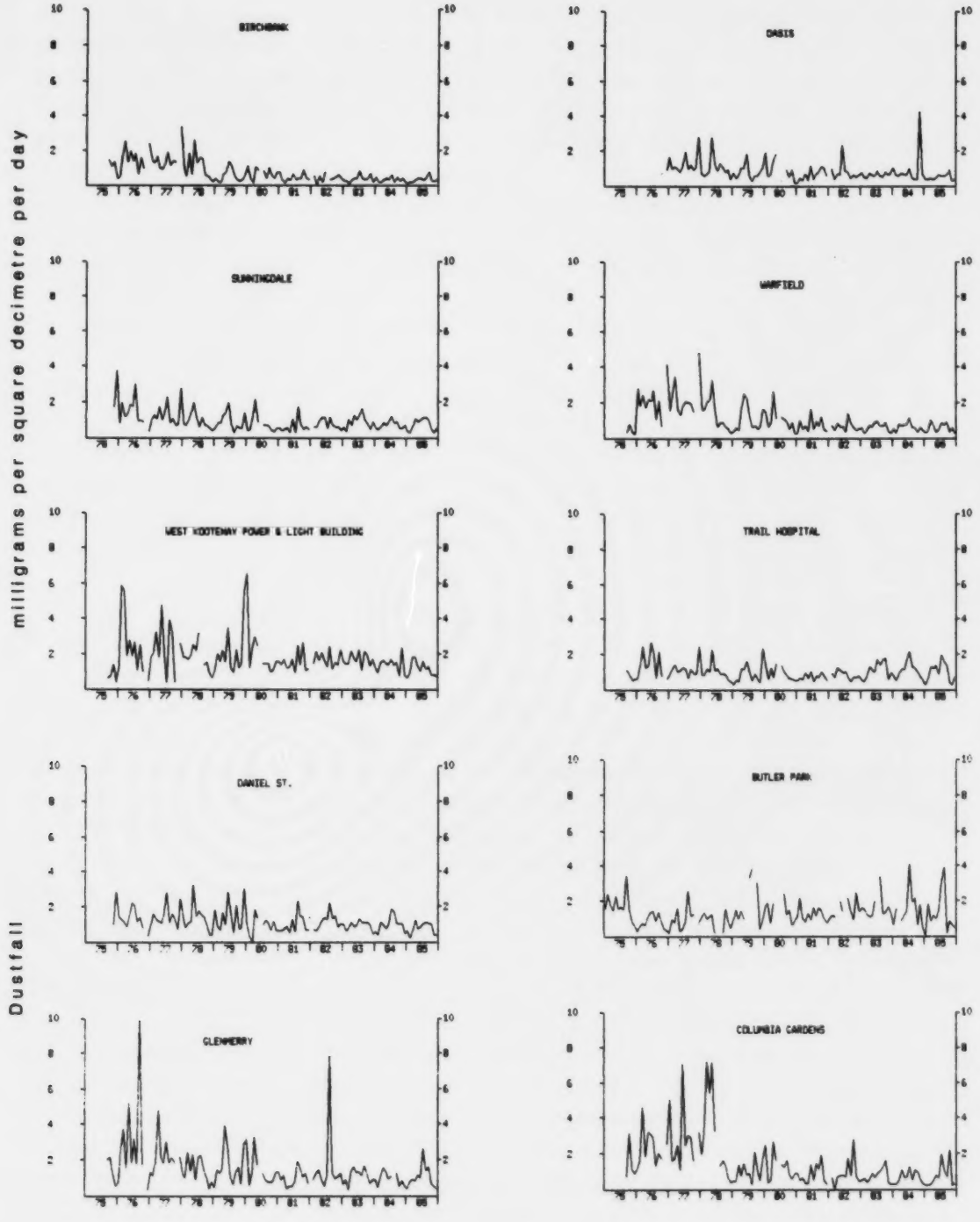

Figure 12 :Recorded dustfall for stations near Trail.

This raises questions regarding the validity of the data. The change is most obvious in the data from those stations that have the highest dustfall levels and are also relatively close to the smelter. That might indicate a real change in the generation of dustfall at the smelter. However, there is no reason that the same change would not be observed at Butler Park.

The data change could also result from analytical differences between the methodology used by the Ministry of Environment and Cominco Ltd. and/or mathematical miscalculation. Most of these data have undergone at least one units conversion, from ton/mi^2/mon to mg/dm^2/day. Both of these possible explanations for the data change were investigated, but no evidence for either was found.

A number of analyses were undertaken to study the nature of the 1980 data change. The results of regression analysis (Table 11) indicate that all Cominco Ltd. stations show a decrease over the entire study period, but Butler Park shows a statistically insignificant increase. However when the data are split into two time periods, 1975-79 and 1981-85, the later decrease is found to be less than the earlier decrease except at the West Kootenay Power & Light building station, and the level of significance drops. The decrease in significance likely reflects the decreased sample size. The difference between the Butler Park station and the others is also more pronounced.

Double mass analysis is a method of determining whether or not the same parameter, recorded at two sites, reflects the same conditions. This analysis consists of plotting the cumulative totals of the parameter from the two sites. If the two sites are sampling analogous parameters these totals will plot to a straight line. The slope of the line will indicate the relative levels of this parameter at each site. If the slope changes then the relationship of the two sites with respect to this parameter have changed - i.e. they are no longer collecting the same thing.

Table 11 : Results of regression analyses on dustfall data from stations in Trail

	Total	Butler Park	Birchbank	Oasis	Sunning-dale	Warfield Substation	WKP&L Bldg	Trail Hospital	Daniel St.	Glenmerry	Columbia Gardens
1975-85											
Change (%)	-8.8	+3.2	-12.8	-5.7	-6.5	-14.2	-7.7	-1.9	-6.0	-14.0	-21.4
Significance	0.000	0.093	0.000	0.002	0.000	0.000	0.007	0.116	0.000	0.000	0.000
1975-79											
Change (%)	-13.7	-4.6	-24.2	-14.1	-15.5	-16.3	-3.9	-8.8	+3.8	-28.1	-29.1
Significance	0.000	0.277	0.001	0.067	0.026	0.077	0.400	0.086	0.322	0.054	0.077
1981-85											
Change (%)	-0.7	+11.3	-3.1	+0.3	+2.4	-2.8	-10.2	+8.8	-4.5	-4.4	-1.1
Significance	0.341	0.086	0.037	0.473	0.200	0.126	0.007	0.010	0.113	0.311	0.410

Notes:

i) Significance is a measure of the probability of the change being true, i.e. a significance of 0.05 means that there is a 5% chance that there is in fact no change, and therefore a 95% chance that the indicated change is true, while a significance of 0.35 indicates a 35% chance of there being no change. The term "statistically significant", as accepted by the scientific community, usually indicates a significance of less than 0.05.

Double mass analysis comparing the West Kootenay Power & Light building and Butler Park stations indicates that the relationship between the two data sets changed during 1980 (Fig. 13). The dustfall measured at Butler Park increased relative to that of the downtown station. This could indicate a change in the Butler Park situation rather than any fault with the data. For example, have the summer activities at the baseball diamond increased since 1980? We have not been able to confirm any major change of this type.

In any case, an increase in dustfall generated at Butler Park does not explain the concurrent decrease in dustfall and variability observed at the other stations.

The modernization projects completed to date should have contributed to a general decrease in the levels of dustfall generated from the smelter. However the change noted above does not coincide with the completion of any modernization project. Nor is there any other noticeable change in the data which corresponds to the completion of a modernization project.

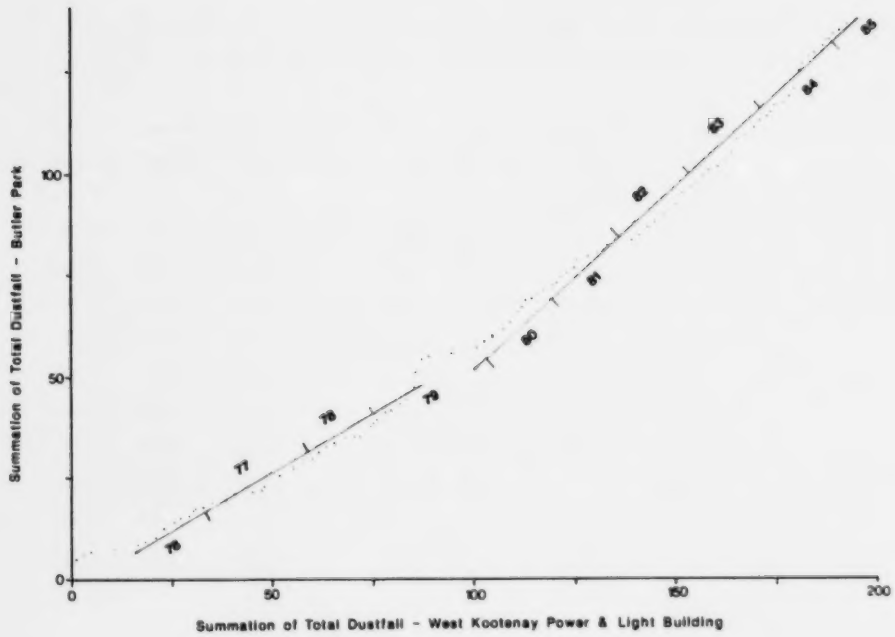

Figure 13 :Graph of double mass analysis of dustfall data from Butler Park and the West Kootenay Power & Light building stations.

Turning to other aspects of the dustfall data, comparison of the recorded dustfall levels in Trail with levels recorded in Vancouver (Table 12) shows that the levels measured in proximity to the smelter are somewhat higher than those measured at an industrial site and those distant from the smelter are similar to a residential site.

The high levels recorded at the Glenmerry and Columbia Gardens monitoring stations during 1975 - 1978 likely result from the construction of the Seven Mile dam on the Pend Oreille River.

It is apparent from the Butler Park data (Fig. 14) that lead and zinc maxima are not directly related. The two metals may come from separate particles, and/or from different sources. A large part of the dustfall generated in Cominco Ltd. operations would result from the external

Table 12 :Annual averages for dustfall stations in Trail and Greater Vancouver in mg/dm^2/day

	Trail										Vancouver	
Year	Birchbank	Oasis	Sunningdale	Warfield Subs.	Trail Hospital	WKP&L Bldg	Daniel St.	Butler Park	Glenmerry	Columbia Gardens	English Bluff	Coq. Mun. Hall
1975	*	*	*	*	*	*	*	1.75	*	*		
1976	1.52	*	1.35	2.07	1.43	2.42	1.28	0.86	2.97	2.34		
1977	1.43	1.34	1.35	2.07	1.20	2.25	1.51	0.91	2.02	2.71		
1978	1.08	1.06	0.94	1.38	1.03	1.68	1.33	0.84	1.46	2.81		
1979	0.57	0.83	0.93	1.13	0.94	2.09	1.49	1.46	1.64	0.99		
1980	0.71	0.96	0.78	1.07	0.97	2.19	0.97	1.22	1.45	1.31		
1981	0.47	0.68	0.64	0.75	0.73	1.59	1.02	1.13	1.02	0.84	0.5	1.2
1982	0.47	0.83	0.75	0.67	0.83	1.73	1.18	1.38	1.64	0.89	0.7	1.1
1983	0.40	0.70	0.93	0.64	1.14	1.76	0.98	1.48	1.10	0.77	0.7	0.9
1984	0.36	1.00	0.74	0.65	1.12	1.44	1.03	1.42	1.03	0.69	0.6	0.7
1985	0.34	0.54	0.75	0.61	1.03	1.20	0.81	1.33	1.04	0.78	*	0.8

Note: * indicates incomplete data

handling of concentrates and the subsequent entrainment of particles by wind. As such, these particles would be expected to have differing metal content, especially as regards to lead and zinc.

This analysis also shows (Appendix I) that most of the dustfall is in a soluble form. Therefore most of the metals are in a form which, if ingested, could be readily assimilated. However such soluble compounds would also be leached from the soil by rainfall.

Fluorides

There are two types of fluoride emissions from the smelter complex: gaseous fluorides, mostly in the form of hydrogen fluoride (HF), and particulate fluorides.

The major emitter of HF is the lead refinery. The installation of the refinery scrubber should have reduced these emissions. There is a marked across-the-board decrease in the fluoridation index which coincides with the completion date of the refinery scrubber (Fig. 15) As there are no other emission sources of gaseous fluorides in the

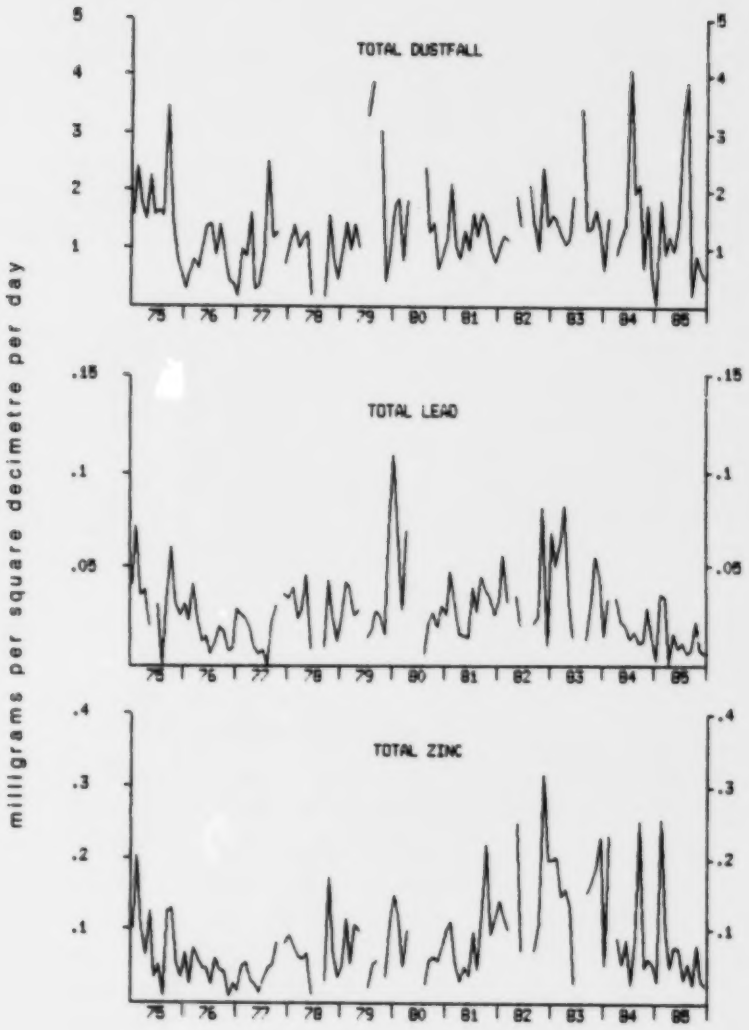

Figure 14 :Graphs of total dustfall and its lead and zinc components from Butler Park.

Trail area other than the Cominco Ltd. plants, this reduction can be directly attributed to the refinery scrubber.

This same decrease is not found in the total fluoride data (Fig. 16). These data are highly variable, likely a result of a similar small sample/particle size interaction as discussed for total suspended particulate. The major emitter of particulate fluorides is the fertilizer complex.

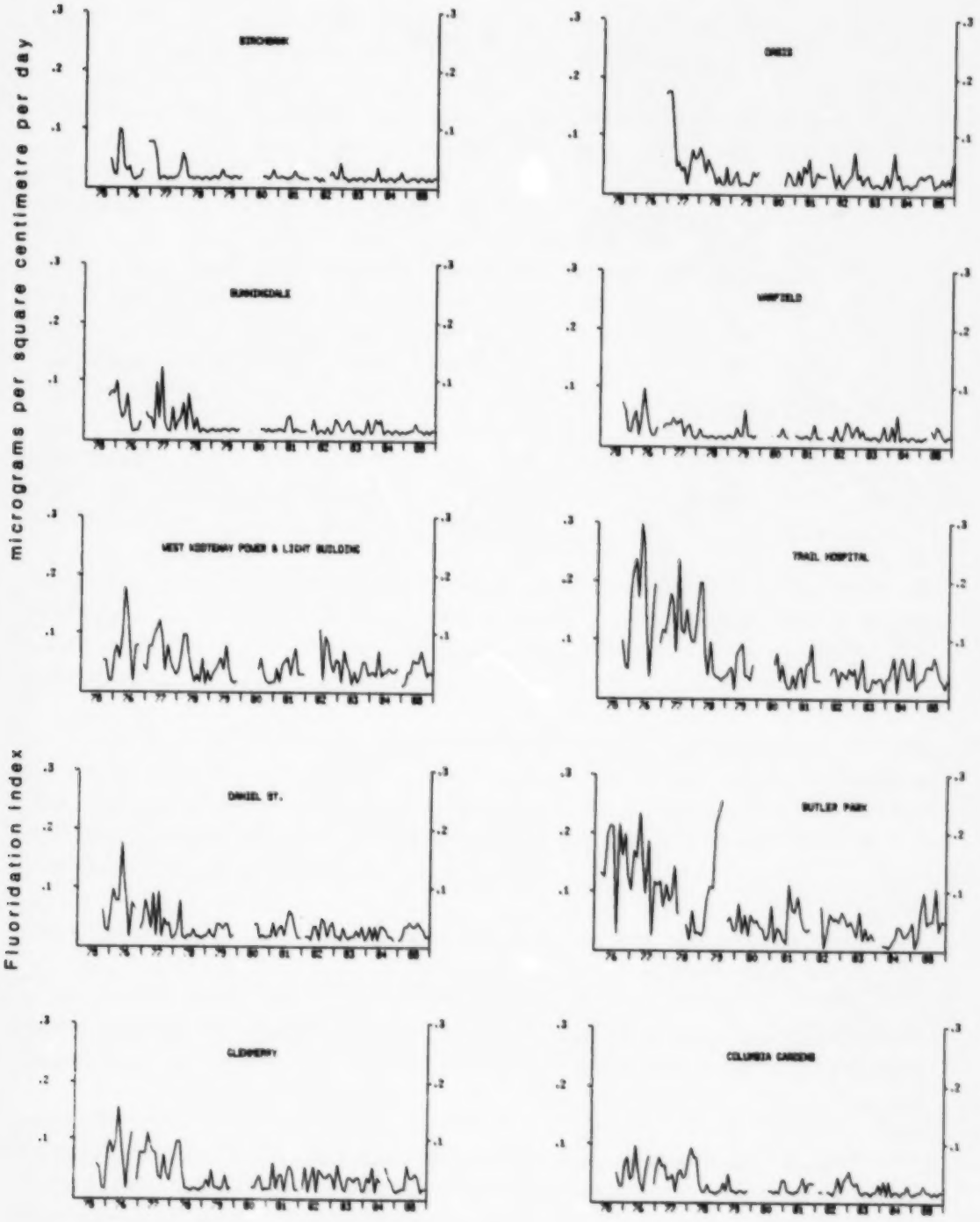

Figure 15 :Graphs of the fluoridation indices for stations near Trail.

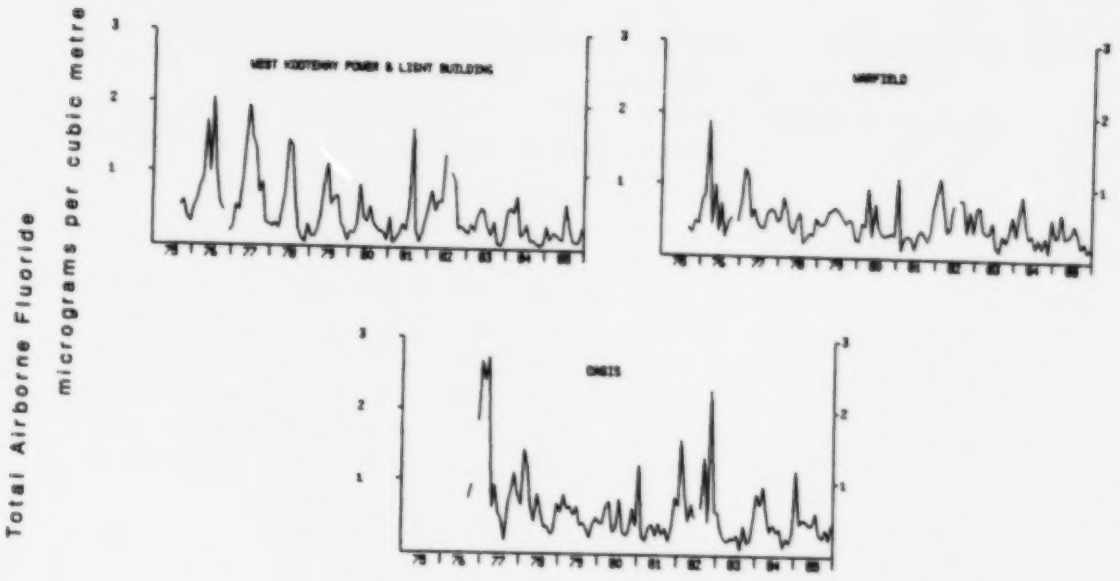

Figure 16 :Graphs of total airborne fluoride levels for three stations near Trail.

The annual average fluoridation index can be compared with the environmental objectives using the conversion factor of 8.7 plus or minus 1.6 [$(ug/m^3)/(ug/cm^2/day)$], calculated by Lynch et al., 1978. The objective levels of 0.1 and 2.0 ug/m^3 fluorine convert to fluoridation indices of 0.11 and 0.23 $ug/cm^2/day$, respectively. All of the recent annual average fluoridation indices are less than 0.05 $ug/cm^2/day$ (Table 13).

Ambient Sulphur Dioxide

The sulphation index data (Fig. 17) show that the seasonality of the ambient SO_2 levels generally increases with distance from the smelter. Oasis shows the greatest seasonality and highest annual averages (Table 14). These high annual averages are the result of elevated levels of SO_2 in the fall/winter months. This phenomenon is also evident from comparison of the number of excursions above the various envirnomental objective and permit levels (Fig. 18). It is also evident that, of the stations close to the smelter, Butler Park has higher levels of SO_2.

Table 13 :Annual averages for fluoride for stations near Trail in ug/cm^2/day.

Year	Birchbank	Oasis	Sunningdale	Warfield Substation	Trail Hospital	WKP&L Bldg	Daniel St.	Butler Park	Glenmerry	Columbia Gardens
1976	0.044	*	0.044	0.041	0.174	0.080	0.077	0.135	0.083	0.057
1977	0.032	0.077	0.044	0.034	0.137	0.072	0.048	0.130	0.058	0.050
1978	0.023	0.040	0.032	0.019	0.087	0.048	0.025	0.063	0.042	0.042
1979	0.018	0.024	0.016	0.022	0.049	0.034	0.026	0.102	0.022	0.021
1980	0.014	0.018	0.013	0.013	0.035	0.025	0.020	0.043	0.021	0.015
1981	0.019	0.033	0.021	0.017	0.043	0.042	0.033	0.053	0.032	0.026
1982	0.020	0.033	0.021	0.023	0.040	0.044	0.028	0.037	0.034	0.022
1983	0.016	0.022	0.020	0.021	0.032	0.039	0.020	0.040	0.030	0.025
1984	0.019	0.028	0.020	0.021	0.046	0.035	0.022	0.018	0.032	0.020
1985	0.016	0.027	0.017	0.022	0.043	0.039	0.030	0.069	0.027	0.017

Note: * indicates incomplete data

Table 14: Annual average sulphur dioxide levels for stations in Trail in ug/m^3

Year	Butler Park	WKP&L Bldg.	Warfield Substation	Oasis
1977	*	72.00	60.23	111.82
1978	114.19	73.47	61.78	101.28
1979	103.62	74.35	66.05	96.49
1980	94.56	72.89	65.04	98.28
1981	94.54	73.42	64.08	95.54
1982	97.15	71.84	65.30	93.68
1983	96.33	70.70	64.63	88.69
1984	81.61	70.13	64.11	86.75
1985	65.81	58.27	64.40	120.43

Note: * indicates incomplete data

Atmospheric studies commissioned by Cominco Ltd. (MEP, 1977, 1978a, 1978b) have shown that under inversion conditions the emission plume is often trapped in the valley and has a gentle upvalley drift into the Oasis area. This results in what is termed direct level impingement at the Oasis monitoring station. The elevated levels at Oasis are directly attributable to the decreased dispersion capability under such conditions.

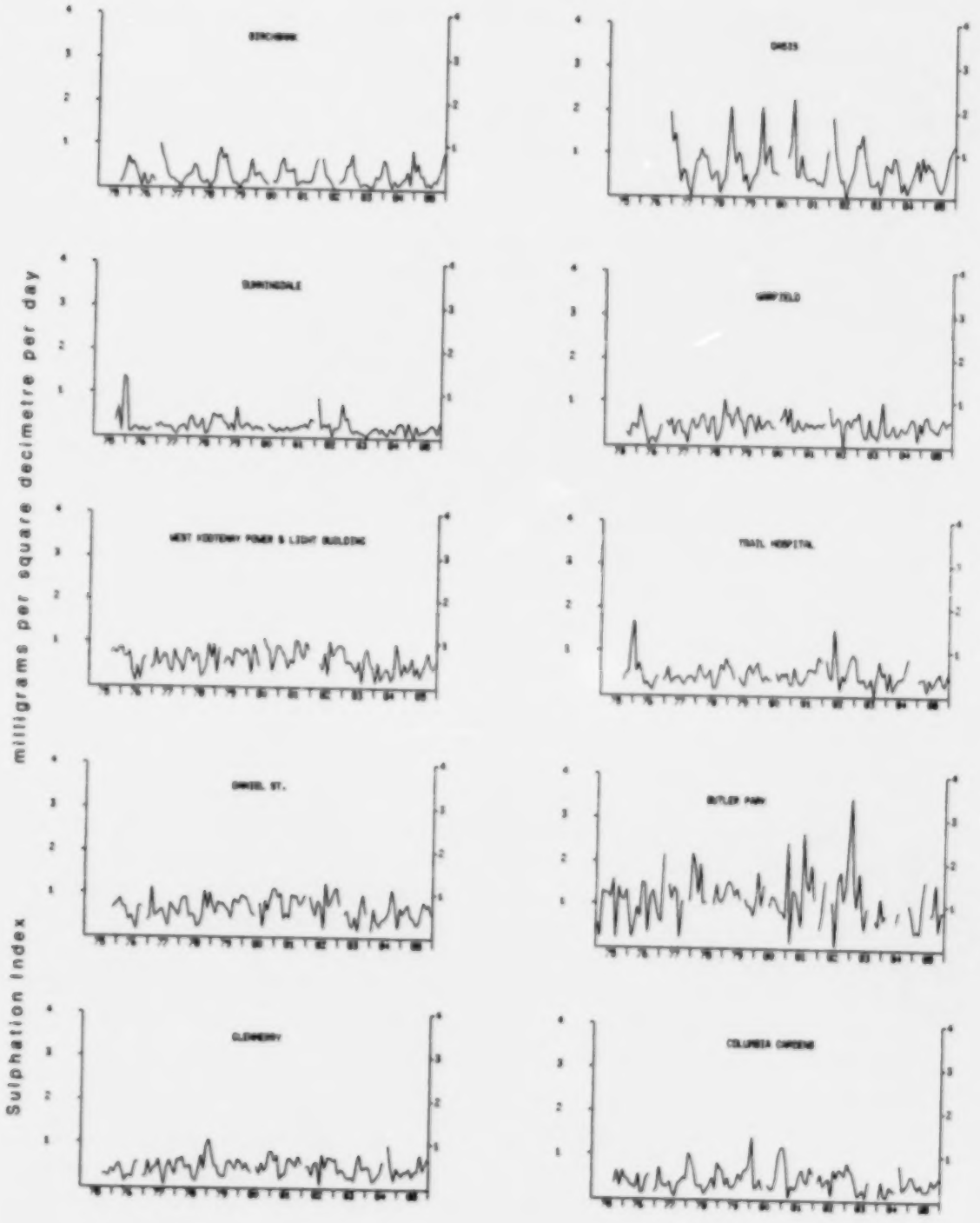

Figure 17 :Graphs of the sulphation indices for stations in the Trail area.

The elevated levels at Butler Park are thought to result from the looping or shearing behaviour of the emission plume. On many occasions the plume has been observed to be carried to the ground in the vicinity of Butler Park (J. M^{c}Cunn, Cominco Ltd., pers. comm.,1986).

In general it can be said that there has been a decrease in the annual average SO_2 level, and that Cominco Ltd. manages the ambient SO_2 regime in accordance with its permit limits.

Cominco Ltd. has developed a set of emission control procedures involving production reductions of the major emitting plants. These procedures are instigated by the ambient SO2 level at any remote sensor exceeding 800 ug/m^3 for one hour, and have set trigger points to relax or intensify emission controls. The plants involved in these procedures are the sinter plant, the slag fuming furnaces and the roasters of zinc operations. Appendix III gives an hour by hour history of ambient SO_2 levels, SO_2 emissions from the main stacks, and the control measures taken on June 12, 1985. This shows the effect and dispersion of a typical diurnal inversion.

Emissions

The emission data available is inadequate for detailed correlation analysis with measured ambient levels of parameters such as total suspended particulate or suspended particulate metals. It is highly unlikely that a single sample per month would adequately reflect the total emissions from the main stacks. In many cases smaller stacks are sampled quarterly or annually. However, some analysis of the data was undertaken.

Graphs of particulate emissions (Fig. 19) indicate that the lead smelter is the source of the bulk of the particulate emissions. It is therefore reasonable to assume that there would be a reduction in ambient total suspended particulate levels if the new smelting technology were installed.

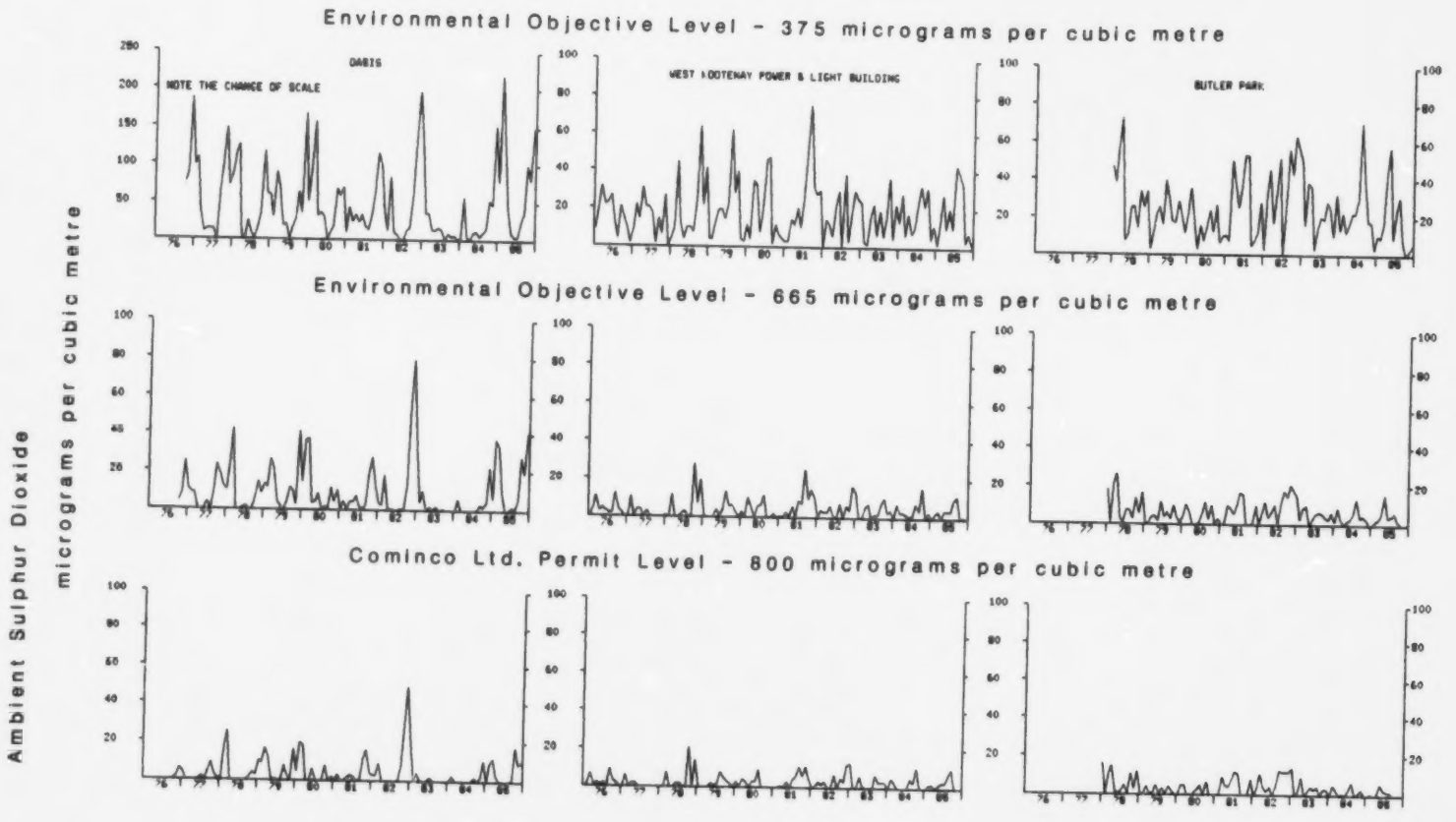
Environmental Objective Level - 375 micrograms per cubic metre
OASIS
NOTE THE CHANGE OF SCALE
WEST KOOTENAY POWER & LIGHT BUILDING
BUTLER PARK
Environmental Objective Level - 665 micrograms per cubic metre
Cominco Ltd. Permit Level - 800 micrograms per cubic metre
Ambient Sulphur Dioxide
micrograms per cubic metre

Figure 18: Graphs of the number of excursions above the provincial 3 hour environmental objective levels (375/665 ug/m^3) and Cominco Ltd.'s 3 hour permit level (800 ug/m^3) for ambient SO_2

Emission particle size analysis reveals that 95% of the particles are less than 10 microns in size (J. McCunn, Cominco Ltd., pers. comm. 1986). Therefore stack emissions could be the major source of atmospheric total suspended particulate in Trail. Another source could be re-entrainment of settled particulate matter by winds.

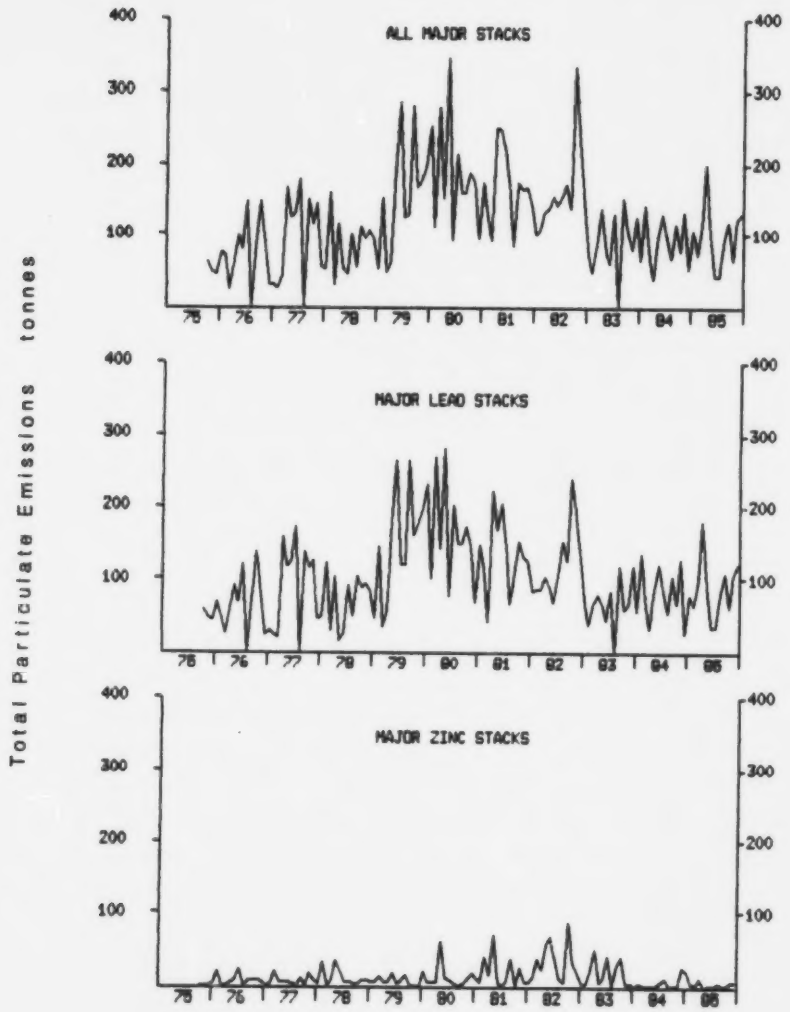

Figure 19 :Graphs of total particulate emissions showing the relative contributions of lead and zinc operations.

SUMMARY

1- There are no obvious long term trends in suspended particulate levels, although there is a general decrease in all suspended particulate levels since 1983.

2- High ambient levels of total suspended particulate and suspended particulate metals appear to be closely related to atmospheric dispersive capability.

3- Total suspended particulate levels in Trail are comparable with those of Vancouver, suspended particulate lead levels are approximately double those of Vancouver and suspended particulate zinc levels are approximately ten times those of Vancouver.

4- Dustfall levels appear to be comparable with those of Greater Vancouver, although there are unanswered questions about the reliability of the Trail data.

5- Installation of the refinery scrubber reduced the ambient levels of gaseous fluorides and total arsenic.

6- To meet the ambient SO_2 requirements of its permits, Cominco Ltd. operates a control regime to curtail production whenever atmospheric conditions are conducive to the accumulation of sulphur dioxide in the valley. Localized elevated levels of SO_2 can be caused by poor dispersion conditions or emission plume behaviour.

7- The existing lead smelter appears to be the source of most of the particulate emissions from Cominco Ltd. Trail operations.

RECOMMENDATIONS

1- The value of the long term data base and its possible future applications, such as quantifying subsequent emission improvements and studying health effects, should be considered carefully before any ambient air monitoring is dropped in the Trail area.

2- A meaningful emission/ambient air quality correlation can be developed only if the emission data is upgraded so that an approximation of total emissions from all parts of the refinery/fertilizer complex can be calculated. This would require an increase in the number of points monitored and the frequency of that monitoring.

3- Cominco Ltd. should change their total suspended particulate monitoring equipment to high volume samplers to ensure compatibility with data collected at other locations in Canada, and improve the reliability of the data.

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APPENDIX I - Air Quality Data

This appendix presents the ambient air quality data used in the preceding report. Site names and SEAM (provincial catalogue) site numbers are as follows:

Butler Park	0250009
West Kootenay Power & Light Building	0260010
Warfield Substation	0260011
Oasis	0260022
Daniel St.	0260009
Columbia Gardens	0260012
Trail Hospital	0260023
Sunningdale	0260025
Glenmerry	0260026
Birchbank	0260004

The data are presented in the folowing order:

Suspended Particulate Data
- Butler Park
- West Kootenay Power & Light building
- Warfield Substation
- Oasis

Impinger Train Data
- West Kootenay Power & Light building
- Warfield Substation
- Oasis

Monthly Data
- Butler Park
- West Kootenay Power & Light building
- Warfield Substation
- Oasis
- Daniel St.
- Columbia Gardens
- Trail Hospital
- Sunningdale
- Glenmerry
- Birchbank

SUSPENDED PARTICULATE DATA

BUTLER PARK

Date	Total Suspended Particulate ug/m3	Arsenic ug/m3	Copper ug/m3	Cadmium ug/m3	Lead ug/m3	Zinc ug/m3
750103	21.6		.08	.018	.69	.56
750109	12.5		.07	.005	.20	.13
750115	46.8		.11	.036	1.25	1.15
750121	51.1		.13	.038	1.93	1.18
750127	100.0		.10	.090	2.12	1.57
750202	79.8		.08	.075	3.10	5.63
750208	59.3		.06	.077	1.94	2.37
750214	158.0		.26	.198	4.97	11.94
750223	69.4		.11	.175	4.54	3.34
750301	102.6		.10	.093	3.16	2.04
750307	157.9		.16	.160	5.17	4.94
750313	76.7		.10	.013	.68	.50
750319	160.9					
750325	97.9		.09	.490	1.95	1.79
750331	71.0		.10	.031	1.57	1.39
750406	109.5		.07	.114	4.22	3.16
750412	99.4		.07	.079	2.69	2.70
750418	62.1		.04	.016	.57	.50
750424	31.2		.06	.047	1.20	1.05
750430	77.0		.08	.072	2.08	1.33
750506	91.0		.11	.115	2.02	2.25
750512	44.0		.04	.018	.54	.55
750518	90.0		.06	.041	1.60	1.40
750524	59.0		.04	.022	.99	1.27
750530	94.0		.10	.043	1.78	2.51
750605	55.0		.19	.045	1.44	1.41
750611	207.0		.44	.171	5.70	11.80
750617	208.0		.30	.200	4.38	8.10
750629	44.0		.33	.036	.97	1.06
750705	132.0		.39	.058	1.59	1.62
750711	377.0					
750723	81.0		.27	.076	2.21	3.50
750729	69.4		.23	.049	2.19	3.05
750810	49.0		.31	.013	.76	.82
750828	46.0		.25	.011	.89	1.20
750903	80.0		.25	.154	7.77	3.61

SUSPENDED PARTICULATE DATA

BUTLER PARK

Date	Total Suspended Particulate ug/m3	Arsenic ug/m3	Copper ug/m3	Cadmium ug/m3	Lead ug/m3	Zinc ug/m3
750915	155.0		.11	.183	5.24	10.17
750922	75.0		.08	.056	2.16	4.87
750927	87.0		.08	.077	2.16	4.76
751003	67.0		.07	.076	1.95	2.67
751009	54.0		.07	.058	1.83	1.77
751015	49.0		.36	.089	2.50	2.65
751021	51.0		.06	.061	1.66	1.60
751027	42.0		.06	.067	2.05	1.90
751102	31.0		.04	.043	1.66	1.14
751108	18.0		.02	.005	.38	.18
751114	49.0		.10	.053	2.31	1.72
751120	56.0		.07	.040	2.03	1.37
751126	47.0		.07	.048	2.11	1.19
751202	59.0		.03	.010	.41	.15
751208	48.0		.10	.024	.78	.37
751214	46.0		.07	.024	.78	.51
751220	42.0		.09	.030	.93	.77
751226	84.0		.22	.279	6.18	1.52
760101	83.0		.18	.074	2.08	1.35
760107	28.0		.12	.030	.74	.37
760113	53.0		.17	.087	1.88	1.30
760119	255.0					
760125	74.0		.22	.365	3.37	2.51
760131	116.0		.11	.078	2.17	2.29
760206	171.0		.25	.104	4.65	4.29
760212	80.0		.15	.083	2.77	.96
760218	41.0		.05	.008	.49	.24
760224	47.0		.07	.018	.56	.39
760301	69.0		.25	.096	2.71	2.38
760307	65.0		.25	.147	3.10	2.50
760313	104.0		.21	.090	2.89	4.86
760319	85.0		.24	.057	2.23	1.93
760325	90.0		.22	.056	2.15	1.70
760331	55.0		.20	.082	2.66	1.71
760406	99.0		.21	.112	2.97	2.26
760412	64.0		.50	.097	2.90	3.53
760418	33.0		.18	.025	.76	.86
760424	57.0		.19	.047	1.21	1.57

SUSPENDED PARTICULATE DATA

BUTLER PARK

Date	Total Suspended Particulate ug/m3	Arsenic ug/m3	Copper ug/m3	Cadmium ug/m3	Lead ug/m3	Zinc ug/m3
760430	101.0		.32	.117	3.85	6.37
760506	82.0		.41	.176	4.16	9.01
760512	87.0		.31	.144	3.94	3.64
760518	63.0		.18	.087	1.85	2.73
760524	28.0		.12	.031	.86	.92
760530	11.0		.05	.017	.45	.35
760605	50.0		.09	.173	3.39	3.21
760611	63.0		.12	.096	2.30	2.94
760623	49.0		.09	.066	1.55	1.22
760629	172.0		.22	.389	8.57	8.54
760705	79.0		.09	.085	1.96	2.54
760711	37.0		.05	.025	.54	.60
760717	86.0		.07	.073	2.37	2.59
760723	184.0					
760729	60.0		.14	.076	2.27	1.14
760804	52.0		.10	.043	1.24	3.28
760810	74.0		.10	.090	2.39	6.70
760816	22.0		.05	.040	.54	.32
760822	72.0		.47	.014	1.58	.98
760828	41.0		.05	.015	.60	.94
761003	34.0		.14	.069	1.98	1.38
761009	172.0		.24	.061	2.91	2.61
761015	63.0		.17	.068	3.38	2.69
761021	82.0		.15	.035	2.30	2.79
761027	55.0		.31	.054	1.18	1.29
761102	58.0		.20	.022	1.21	1.15
761108	74.0		.25	.066	3.10	2.27
761114	44.0		.18	.027	1.39	1.90
761120	78.0		.16	.078	2.68	1.90
761126	65.0		.07	.033	1.84	1.96
761202	94.1		.22	.093	3.03	3.70
761208	30.0		.06	.011	.35	.18
761214	50.4		.05	.025	.94	.34
761220	64.1		.06	.029	.93	.32
761226	15.9		.05	.020	.28	.18
770101	52.3		.06	.046	1.55	.84

SUSPENDED PARTICULATE DATA

BUTLER PARK

Date	Total Suspended Particulate ug/m3	Arsenic ug/m3	Copper ug/m3	Cadmium ug/m3	Lead ug/m3	Zinc ug/m3
770107	121.0		.13	.129	4.21	3.49
770113	52.4		.05	.034	1.16	.43
770119	105.0		.15	.140	5.19	2.61
770125	73.4		.09	.022	.63	.37
770131	93.4		.16	.033	1.34	.60
770206	49.9		.12	.025	.80	.59
770218	89.1		.15	.166	4.79	3.03
770224	193.0		.50	.089	5.02	7.17
770302	94.7		.16	.025	1.64	1.02
770320	58.2		.18	.035	1.65	1.03
770326	43.8		.11	.029	.66	.54
770401	73.0		.21	.029	2.01	1.56
770407	120.0		.22	.095	3.27	2.24
770413	56.0		.14	.079	1.85	1.77
770419	52.0		.19	.043	1.31	1.06
770425	192.0		.18	.113	4.26	5.27
770501	146.0		.25	.126	5.87	6.76
770507	57.0		.14	.085	2.48	2.15
770513	64.0		.17	.035	1.04	1.26
770519	85.0		.21	.128	2.95	11.27
770525	105.0		.35	.130	4.54	6.02
770531	115.0		.25	.172	5.24	14.89
770606	81.0		.17	.052	2.13	2.75
770612	37.0		.20	.038	1.07	2.09
770618	87.0					
770624	135.0					
770630	108.0		.25	.099	3.58	11.72
770706	76.0		.31	.200	3.03	7.58
770712	50.0		.13	.051	1.57	2.35
770718	77.0					
770724	74.0					
770730	47.0		.20	.051	1.70	3.22
770805	62.0		.13	.077	2.02	12.12
770811	64.0		.36	.061	2.20	5.36
770817	71.0		.25	.020	1.08	2.10
770823	52.0		.18	.009	.44	1.77
770829	30.0		.12	.011	.81	1.30

SUSPENDED PARTICULATE DATA

BUTLER PARK

Date	Total Suspended Particulate ug/m3	Arsenic ug/m3	Copper ug/m3	Cadmium ug/m3	Lead ug/m3	Zinc ug/m3
770904	46.0			.094	2.12	1.55
770904	49.0			.090	2.15	2.49
770916	46.0			.090	1.97	1.25
770922	25.0			.015	.42	.36
770928	59.0			.106	2.07	1.48
771004	65.0			.152	3.75	4.02
771010	82.0			.171	4.24	9.36
771016	59.0			.121	3.52	3.41
771022	88.0			.163	2.60	2.77
771028	51.0			.096	2.73	2.10
771103	65.0			.125	2.92	1.92
771109	56.0			.123	1.89	1.04
771115	35.0			.053	1.33	1.03
771121	84.0			.257	4.97	5.23
771127	11.0			.001	.42	.23
771203	33.0			.021	1.48	1.06
771209	38.0			.034	1.40	1.15
771215	50.0			.093	4.61	2.83
771221	98.0			.141	4.35	3.01
771227	39.0			.013	.99	1.44
780102	38.0			.051	2.81	1.42
780108	53.0			.141	2.93	2.17
780114	45.0			.075	2.37	2.25
780120	72.0			.050	2.12	2.11
780126	76.0			.060	2.51	2.03
780201	61.0			.118	2.71	2.52
780207	39.0			.062	1.59	1.39
780213	140.0			.084	3.24	2.77
780219	148.0			.221	4.40	4.66
780225	96.0			.074	1.95	1.81
780303	128.0			.111	3.80	2.83
780309	239.0			.160	7.49	5.29
780315	95.0			.086	2.69	2.09
780321	135.0			.105	2.34	2.87
780327	85.0			.105	2.60	3.92
780402	18.0		.08	.013	.37	.39
780408	117.0		.13	.105	3.77	3.80
780414	114.0		.12	.144	.50	4.85

SUSPENDED PARTICULATE DATA

BUTLER PARK

Date	Total Suspended Particulate ug/m3	Arsenic ug/m3	Copper ug/m3	Cadmium ug/m3	Lead ug/m3	Zinc ug/m3
780420	39.0		.09	.039	.76	1.00
780426	142.0		.25	.162	6.00	8.70
780502	52.0		.12	.050	1.80	3.13
780508	86.0		.13	.120	3.60	3.74
780514	22.0		.09	.030	.78	.77
780520	58.0		.11	.050	2.13	1.53
780526	45.0		.12	.050	1.76	1.82
780601	85.0		.18	.160	5.24	4.42
780607	92.0		.13	.120	3.08	2.96
780613	30.0		.08	.080	2.10	1.34
780625	37.0		.08	.030	.70	.45
780701	54.0		.11	.060	3.12	3.30
780713	78.0					
780719	71.0		.27	.060	4.67	4.88
780725	100.0		.20	.120	5.18	6.46
780731	95.0		.21	.090	4.08	1.07
780806	58.0		.11	.060	3.01	2.32
780812	50.0		.09	.010	.45	.32
780818	30.0		.08	.010	.48	.39
780824	54.0		.10	.210	3.54	2.28
780830	62.0		.14	.080	2.18	1.95
780905	40.0		.09	.060	2.21	1.68
780911	32.0		.09	.060	1.30	1.11
780917	45.0		.09	.070	1.85	5.83
780923	37.0		.09	.030	1.26	.90
780929	93.0		.15	.120	4.01	5.55
781005	59.0		.10	.040	1.91	3.10
781017	69.0		.11	.070	2.36	3.25
781011	65.0		.12	.070	2.75	5.27
781023	63.0		.09	.030	.96	1.72
781029	27.0		.05	.010	.43	.93
781104	65.0		.08	.140	4.10	5.85
781110	82.0		.12	.080	2.50	9.92
781116	99.0		.09	.110	2.30	1.53
781122	71.0		.10	.051	7.00	3.05
781128	14.0		.14	.010	.01	.06

SUSPENDED PARTICULATE DATA

BUTLER PARK

Date	Total Suspended Particulate ug/m3	Arsenic ug/m3	Copper ug/m3	Cadmium ug/m3	Lead ug/m3	Zinc ug/m3
781204	22.0		.05	.020	.56	.55
781210	53.0		.05	.140	3.38	1.56
781216	64.0		.06	.120	3.40	1.76
781222	32.0		.05	.030	.97	2.26
781228	87.0		.17	.060	2.32	4.69
790103	52.0	.033	.08	.170	3.93	3.68
790121	58.0	.016	.06	.070	1.86	.74
790127	59.0	.010	.05	.080	1.78	1.19
790202	36.0		.07	.010	.37	.29
790214	87.0		.32	.080	3.17	2.95
790220	51.0		.26	.060	1.75	3.95
790226	29.0		.14	.090	1.56	.68
790304	61.0	.640	.12	.110	3.92	1.28
790310	192.0	.130	.25	.080	5.25	3.24
790316	143.0	1.270	.24	.140	3.91	5.48
790328	59.0	.210	.10	.040	1.41	.98
790403	51.0		.09	.020	.82	.46
790409	68.0		.12	.070	2.43	2.34
790415	44.0		.12	.030	1.21	1.72
790421	65.0		.09	.070	2.68	7.00
790427	117.0		.17	.070	3.36	4.45
790503	64.0	.010	.12	.050	1.97	2.06
790509	79.0	2.220	.12	.060	3.56	5.15
790515	108.0	.950	.13	.060	2.96	5.48
790521	71.0	.250	.12	.070	2.76	3.61
790527	47.0	.130	.09	.030	1.04	1.39
790602	94.0		.12	.040	1.80	2.77
790608	103.0		.20	.130	4.41	6.30
790614	93.0		.14	.120	3.18	5.13
790620	34.0		.08	.010	.65	.78
790702	37.0		.10	.040	.15	2.23
790720	108.0		.14	.060	2.55	3.66
790726	84.0		.18	.480	4.78	5.49
790801	89.0		.17	.100	3.36	3.69
790807	82.0		.18	.080	3.87	4.20
790813	73.0		.13	.050	1.70	3.45

SUSPENDED PARTICULATE DATA

BUTLER PARK

Date	Total Suspended Particulate ug/m3	Arsenic ug/m3	Copper ug/m3	Cadmium ug/m3	Lead ug/m3	Zinc ug/m3
790825	57.0		.01	.110	3.77	3.17
790912	82.0		.23	.140	4.36	3.97
790918	92.0		.20	.050	2.67	2.54
790924	122.0		.20	.100	3.59	13.10
790930	63.0		.18	.080	3.07	3.27
791012	74.0		.32	.050	2.10	2.40
791018	60.0		1.05	.080	2.51	4.85
791024	65.0		1.33	.210	6.29	5.21
791030	149.0		2.99	.230	6.81	11.10
791123	67.0		.13	.050	2.00	1.29
791129	85.0		.16	.090	4.06	2.49
791205	20.0	.100	.07	.010	.28	.16
791211	41.0	.100	.09	.030	1.40	1.58
791217	37.0	.230	.08	.030	1.59	.52
791223	41.0	.470	.07	.020	1.03	.54
800104	82.0	.350	.15	.050	3.18	2.03
800110	57.0	.130	.10	.050	2.11	2.33
800116	38.0	.400	.07	.050	1.98	.80
800122	150.0	1.130	.18	.180	5.47	4.51
800128	87.0	.280	.14	.230	8.80	4.17
800203	24.0	.030	.08	.050	1.89	.34
800209	32.0	.110	.10	.020	.65	.44
800215	61.0	1.560	.09	.070	4.31	3.72
800221	40.0	.390	.13	.030	1.79	.88
800227	70.0	1.630	.15	.060	3.86	1.78
800304	59.0	.440	.11	.050	2.85	1.53
800310	29.0	.010	.09	.010	.50	.25
800316	35.0	.030	.09	.010	.94	.51
800322	66.0	.150	.12	.040	3.06	1.19
800328	63.0	.110	.15	.020	1.16	.86
800403	91.0		.14	.080	2.99	3.47
800409	62.0		.15	.080	3.80	3.09
800415	58.0		.20	.030	1.30	1.45
800421	66.0		.15	.080	2.90	2.50
800427	73.0		.22	.090	4.12	2.39

SUSPENDED PARTICULATE DATA

BUTLER PARK

Date	Total Suspended Particulate ug/m3	Arsenic ug/m3	Copper ug/m3	Cadmium ug/m3	Lead ug/m3	Zinc ug/m3
800503	75.0		.21	.050	3.51	3.02
800509	38.0		.15	.030	1.79	.81
800515	78.0		.17	.020	.70	1.06
800521	419.0		.36	.140	6.13	8.67
800527	37.0		.18	.010	.39	.26
800602	42.0		.19	.020	.51	.63
800608	78.0		.22	.130	3.81	3.94
800614	75.0		.15	.110	4.23	3.51
800620	84.0		.26	.070	2.60	3.51
800626	40.0		.14	.050	1.71	1.99
800702	106.0		.19	.150	3.31	5.66
800708	120.0		.18	.160	6.28	5.50
800714	43.0		.11	.060	1.47	4.10
800720	50.0		.15	.080	2.07	3.01
800726	87.0		.19	.110	3.87	6.32
800801	139.0		.16	.050	1.34	3.18
800807	50.0		.15	.100	2.37	2.43
800813	74.0		.14	.080	2.41	2.67
800819	30.0		.16	.020	.47	.99
800825	66.0		.19	.110	3.79	4.13
800831	39.0		.12	.060	1.25	.91
800906	70.0		.12	.090	2.23	2.55
800912	112.0		.19	.200	3.84	6.95
800918	53.0		.09	.020	.57	.72
800924	87.0		.17	.100	3.98	3.27
800930	49.0		.11	.080	2.46	1.51
801006	102.0		.22	.080	2.41	5.92
801012	87.0		.27	.100	3.42	2.35
801018	41.0		.14	.030	1.37	.58
801024	50.0		.14	.060	1.83	1.82
801030	105.0		.23	.140	3.71	5.40
801117	50.0		.08	.030	.97	2.15
801123	43.0		.07	.030	1.22	2.42
801129	26.0		.08	.020	.67	.31
801205	46.0	.550	.05	.050	1.56	2.29
801211	29.0	.010	.10	.010	.21	.10
801217	19.0	.010	.13	.010	.31	.16
801223	24.0	.220	.04	.010	.41	.20

SUSPENDED PARTICULATE DATA

BUTLER PARK

Date	Total Suspended Particulate ug/m3	Arsenic ug/m3	Copper ug/m3	Cadmium ug/m3	Lead ug/m3	Zinc ug/m3
801229	59.0	.800	.10	.050	1.31	1.17
810104	54.0	.360	.10	.080	1.42	1.38
810110	80.0		.10	.090	2.54	2.47
810116	56.0		.06	.070	1.50	1.98
810122	52.0		.06	.070	1.34	2.03
810128	43.0		.06	.080	1.87	1.98
810203	74.0	.360	.13	.100	2.34	3.15
810209	92.0	.140	.09	.070	1.85	1.82
810215	10.0	.010	.04	.010	.12	.08
810221	43.0	.010	.06	.010	.29	.42
810227	56.0	.750	.05	.030	.74	.93
810305	59.0		.15	.040	1.59	1.58
810311	85.0		.11	.110	2.04	3.47
810317	53.0		.13	.070	1.14	1.82
810323	53.0		.10	.190	2.36	3.46
810329	35.0		.11	.050	.78	.50
810404	34.0		.08	.030	1.11	.60
810410	37.0		.08	.030	.85	.83
810416	91.0		.12	.040	1.37	2.72
810422	79.0		.12	.070	2.27	1.81
810428	55.0			.010	.30	.38
810504	50.0	.210		.020	.63	2.82
810510	98.0	.310		.110	2.87	2.58
810522	60.0	.010		.010	.13	.23
810603	50.0	.010	.27	.010	.21	.64
810609	29.0	.010	.29	.010	.31	.43
810615	68.0	.220	.22	.060	2.00	2.19
810621	55.0	.590	.21	.060	1.75	1.96
810627	111.0	.760	.31	.120		5.10
810703	158.0	.400	.28	.360	8.20	7.58
810710	110.0	.300	.24	.150	2.70	9.38
810715	73.0	.300	.26	.130	1.60	1.68
810721	99.0	.400	.41	.180	5.40	2.54
810727	143.0	.300	.39	.200	7.70	4.98
810802	56.0	.250	.39	.070	1.73	1.83
810808	106.0	.230	.22	.070	2.69	2.99

SUSPENDED PARTICULATE DATA

BUTLER PARK

Date	Total Suspended Particulate ug/m3	Arsenic ug/m3	Copper ug/m3	Cadmium ug/m3	Lead ug/m3	Zinc ug/m3
810814	117.0	.240	.23	.040	1.76	2.95
810820	153.0	.680	.25	.130	3.96	4.90
810826	161.0	.330	.26	.090	4.12	4.46
810901	47.0	.190	.25	.020	.82	1.40
810907	74.0	.310	.30	.190	4.37	4.20
810913	106.0	.490	.31	.150	3.25	8.86
810919	145.0	.960	.30	.220	4.92	6.36
810925	77.0	.670	.26	.100	2.42	3.61
811001	84.0					
811007	35.0					
811013	86.0					
811019	72.0					
811025	79.0					
811031	131.0					
811106	98.0	.660	.43	.060	1.82	3.88
811112	56.0	.390	.32	.060	1.57	1.52
811118	56.0	.440	.31	.040	.97	.81
811124	68.0	.650	.45	.080	.97	3.51
811206	28.0	.130	.56	.020	.67	.65
811212	138.0	1.440	.50	.110	5.16	5.65
811218	52.0	1.420	.31	.060	2.55	2.28
811224	39.0	.020	.52	.010	.40	.47
811230	85.0	.050	.35	.090	3.25	2.98
820105	54.0	.220	.21	.060	1.70	3.67
820111	37.0	.050	.24	.010	.39	.22
820117	54.0	.260	.31	.030	1.34	.97
820123	47.0	.330	.16	.030	.87	1.25
820129	29.0	.180	.25	.020	.60	.49
820204	184.0	.670	.26	.110	3.92	4.90
820210	69.0	.240	.24	.080	2.39	1.23
820216	65.0	.510	.33	.230	4.83	1.98
820222	274.0	.800	.54	.250	6.12	5.08
820228	58.0	.380	.17	.080	2.17	1.34
820306	56.0	.060	.20	.040	.83	1.17
820312	88.0	.320	.24	.130	6.70	4.46
820318	104.0	1.040	.28	.150	7.60	4.30
820324	73.0	.150	.26	.060	2.30	3.13
820330	73.0	.220	.26	.060	1.77	2.05

SUSPENDED PARTICULATE DATA

BUTLER PARK

Date	Total Suspended Particulate ug/m3	Arsenic ug/m3	Copper ug/m3	Cadmium ug/m3	Lead ug/m3	Zinc ug/m3
820405	19.0		.43	.010	.49	.34
820411	67.0		.43	.030	1.07	1.87
820417	51.0		.27	.090	1.44	1.47
820423	143.0		.56	.080	3.11	3.19
820505	69.0	.420	.87	.120	2.90	9.14
820511	92.0	.670	.42	.110	2.11	3.44
820517	50.0	.420	.27	.130	1.88	1.78
820523	72.0	.100	.37	.130	2.56	5.98
820529	69.0	.850	.28	.140	4.66	5.05
820604	78.0	.350	.21	.110	2.10	2.51
820616	147.0	.860	.34	.180	3.46	4.13
820622	87.0	.860	.37	.060	1.85	2.59
820704	7.0	.010	.11	.010	.03	.04
820710	25.0	.010	.22	.010	.18	.21
820716	10.0	.010	.14	.010	.14	.13
820722	24.0	.010	.15	.010	.18	.33
820728	27.0	.010	.13	.010	.27	.49
820821	45.0	.500	.11	.070	2.76	3.08
820827	67.0	.120	.12	.020	.72	1.43
820908	30.0	.044	.08	.010	.48	.79
820914	35.0	.300	.09	.050	1.12	3.14
820920	42.0	.155	.06	.030	.92	2.04
820926	12.0	.027	.04	.010	.34	.68
821002	21.0	.060	.08	.010	.32	.55
821008	17.0	.110	.09	.010	.53	1.11
821014	40.0	.650	.15	.070	1.61	4.03
821020	64.0	.760	.08	.050	1.54	1.72
821026	14.0	.120	.20	.020	.30	.37
821101	63.0	.550	.46	.130	2.99	5.84
821107	40.0	.070	.39	.040	1.28	2.06
821113	128.0	.610	.54	.170	3.03	5.46
821119	48.0	.130	.50	.030	.98	.87
821125	130.0	.730	.31	.160	3.66	3.88
821201	62.0	.710	.26	.150	2.71	2.20

SUSPENDED PARTICULATE DATA

BUTLER PARK

Date	Total Suspended Particulate ug/m3	Arsenic ug/m3	Copper ug/m3	Cadmium ug/m3	Lead ug/m3	Zinc ug/m3
821207	88.0	.420	.21	.080	2.70	3.14
821213	43.0	.150	.23	.060	1.36	.77
821219	21.0	.020	.25	.010	.34	.66
821225	53.0	.050	.21	.040	1.73	1.26
821231	122.0	.370	.18	.060	2.73	2.53
830106	34.0	.130	.23	.010	.58	.55
830112	192.0					
830118	77.0	.870	.13	.080	3.19	3.75
830124	16.0	.070	.18	.010	.34	.34
830130	65.0	.280	.18	.030	.92	1.24
830205	76.0	.210	.14	.020	.84	.90
830211	61.0	.700	.16	.070	2.20	1.40
830217	40.0	.330	.17	.030	.97	.51
830223	27.0	.380	.15	.020	.52	1.02
830301	93.0	.940	.19	.220	4.04	5.01
830307	34.0	.160	.20	.020	.92	1.18
830313	44.0	.103	.19	.050	1.44	1.47
830319	94.0	.270	.29	.070	2.53	3.59
830325	71.0	.157	.16	.050	1.74	2.69
830331	113.0	.790	.26	.200	4.54	9.86
830406	167.0	.550	.44	.300		
830412	53.0	.400	.19	.080	1.98	3.47
830418	119.0	.230	.28	.170	2.93	4.17
830424	29.0	.066	.19	.020	.56	1.14
830430	64.0	.370	.21	.080	1.76	3.44
830506	27.0	.050	.14	.010	.27	.54
830512	38.0	.178	.08	.040	1.02	2.12
830518	45.0	.260	.10	.030	1.21	2.03
830524	62.0	.170	.10	.040	1.16	2.78
830530	84.0	.097	.10	.040	1.37	3.05
830605	64.0	.107	.10	.050	2.54	4.92
830611	21.0	.049	.10	.010	.33	1.46
830617	32.0	.079	.17	.010	.24	.37
830623	43.0	.160	.23	.070	3.05	3.76
830629	30.0	.008	.20	.010	2.68	.43
830711	29.0	.078	.13	.020	.54	1.36
830717	54.0	.398	.10	.180	3.58	4.60
830723	86.0	.467	.15	.180	3.07	7.44

SUSPENDED PARTICULATE DATA

BUTLER PARK

Date	Total Suspended Particulate ug/m3	Arsenic ug/m3	Copper ug/m3	Cadmium ug/m3	Lead ug/m3	Zinc ug/m3
830729	61.0	.445	.22	.080	1.75	5.51
830804	46.0	.067	.15	.020	.55	1.50
830810	36.0	.045	.13	.010	.42	.88
830816	36.0	.017	.12	.020	.46	2.17
830822	59.0	.104	.26	.080	1.59	8.93
830828	57.0	.151	.13	.110	2.26	5.40
830903	39.0	.630	.17	.080	1.61	4.20
830909	38.0	.120	.15	.060	1.17	3.99
830915	86.0	.350	.12	.130	4.34	5.73
830921	75.0	.760	.20	.090	2.95	7.66
830927	107.0	.650	.35	.200	4.32	
831003	42.0	.029	.10	.020	.93	1.22
831009	66.0	.430	.15	.060	2.39	4.33
831015	54.0	.270	.16	.040	1.27	2.96
831021	45.0	.290	.11	.020	1.04	2.21
831027	36.0	.230	.09	.020	.88	1.46
831120	25.0	.410	.06	.050	1.04	1.22
831126	15.0	.008	.10	.010	.20	.42
831202	42.0	.210	.10	.060	1.40	2.09
831208	32.0	.117	.09	.030	.53	.71
831214	64.0	.380	.10	.160	1.90	3.14
831220	92.0	1.440	.16	.190	3.96	6.22
831226	33.0	.040	.08	.040	.95	1.78
840101	57.0	.153	.11	.070	1.56	3.30
840107	8.0	.004	.10	.100	.11	.15
840113	64.0	.400	.11	.050	1.45	2.33
840119	85.0	.500	.16	.050	1.73	3.71
840125	11.0	.020	.11	.020	.27	.64
840131	57.0	.200	.10	.030	.88	2.33
840206	38.0	.124	.10	.020	.68	.92
840212	43.0	.183	.08	.240	4.40	1.74
840218	71.0	.430	.12	.050	1.83	2.36
840224	34.0	.300	.10	.030	1.01	2.18
840313	11.0	.059	.04	.010	.50	.32
840319	40.0	.028	.13	.020	.44	.59
840325	41.0	.095	.13	.040	1.51	1.33

SUSPENDED PARTICULATE DATA

BUTLER PARK

Date	Total Suspended Particulate ug/m3	Arsenic ug/m3	Copper ug/m3	Cadmium ug/m3	Lead ug/m3	Zinc ug/m3
840331	44.0	.142	.13	.080	1.92	2.08
840406	27.0	.270	.11	.040	1.17	1.44
840412	37.0	.210	.14	.050	1.35	1.84
840418	39.0	.290	.11	.050	1.60	1.72
840424	40.0	.380	.11	.060	1.85	2.80
840430	63.0	.430	.14	.080	3.13	2.78
840506	14.0	.017	.11	.010	.30	.37
840512	38.0	.199	.12	.050	1.00	2.30
840518	68.0	.630	.16	.090	2.30	6.09
840524	28.0	.380	.13	.040	1.00	1.54
840530	76.0	.185	.12	.050	1.30	1.63
840605	18.0	.027	.15	.010	.30	.32
840611	40.0	.185	.14	.040	1.30	1.50
840617	49.0	.070	.15	.020	1.00	2.14
840623	52.0	.260	.15	.040	1.40	2.99
840629	32.0	.110	.11	.020	.70	2.08
840705	66.0	.220	.14	.020	1.00	1.67
840711	94.0	.500	.14	.160	4.00	8.84
840723	65.0	.186	.21	.100	2.50	6.96
840729	26.0	.011	.08	.010	.20	.33
840804	66.0	.570	.14	.080	2.50	2.45
840810	108.0	.320	.19	.110	4.30	5.92
840816	77.0	.290	.19	.070	2.60	5.20
840822	73.0	.166	.17	.050	1.80	2.99
840828	53.0	.350	.16	.100	2.60	3.81
840903	68.0	.240	.02	.080	3.50	5.22
840909	44.0	.137	.10	.050	2.30	2.51
840915	49.0	.172	.09	.040	1.60	2.98
840921	36.0	.290	.11	.040	1.20	2.93
840927	44.0	.185	.11	.050	1.50	2.01
841003	75.0	.240	.14	.070	1.80	1.99
841015	98.0	.260	.14	.100	2.90	4.54
841021	82.0	.220	.80	.090	3.00	4.22
841027	18.0	.006	.14	.010	.13	.20
841102	64.0	.660	.11	.110	3.20	2.93
841108	69.0	.580	.18	.080	3.30	4.43

SUSPENDED PARTICULATE DATA

BUTLER PARK

Date	Total Suspended Particulate ug/m3	Arsenic ug/m3	Copper ug/m3	Cadmium ug/m3	Lead ug/m3	Zinc ug/m3
841114	67.0	.200	.17	.040	1.70	1.81
841120	27.0	.210	.12	.040	1.20	.73
841126	19.0	.021	.06	.010	.50	.45
841202	58.0	.104	.12	.020	1.10	1.32
841208	22.0	.007	.55	.010	.10	.28
841214	15.0	.013	.39	.010	.20	.21
841220	28.0	.012	.23	.010	.30	.32
841226	32.0	.036	.30	.020	.60	.48
850101	77.0	.270	.16	.080	2.30	1.54
850107	36.0	.184	.13	.080	3.10	3.01
850113	18.0	.027	.15	.010	.10	.10
850119	35.0	.105	.14	.020	.50	.29
850125	33.0	.097	.15	.010	.30	.39
850131	80.0	.740	.19	.050	1.50	2.19
850206	38.0	.260	.17	.030	.80	1.43
850212	13.0	.079	.18	.010	.30	.29
850218	44.0	.084	.16	.040	.80	.83
850224	25.0	.068	.20	.020	.60	1.19
850302	88.0	.240	.17	.050	1.50	2.68
850308	64.0	.025	.17	.020	.60	.77
850314	50.0	.022	.19	.020	.40	.82
850320	41.0	.037	.17	.010	.30	.51
850326	31.0	.220	.18	.020	.50	.96
850401	38.0	.110	.18	.050	1.00	1.12
850407	64.0	.320	.18	.070	1.80	1.99
850413	57.0	.140	.22	.040	1.00	1.91
850419	23.0	.044	.17	.020	.40	.66
850425	70.0	.180	.17	.070	1.50	1.50
850501	71.0	.310	.18	.110	2.60	2.76
850507	66.0	.350	.22	.070	1.90	2.35
850513	85.0	.870	.17	.230	4.80	4.80
850519	59.0	.210	.21	.090	2.20	2.44
850525	51.0	.300	.22	.080	2.00	4.38
850531	62.0	.510	.31	.080	2.40	3.56
850606	21.0	.270	.18	.030	.60	.66
850618	71.0	1.040	.29	.090	2.20	7.02
850624	34.0	.570	.15	.020	.70	2.13
850630	48.0	.038	.17	.010	.30	1.14

SUSPENDED PARTICULATE DATA

BUTLER PARK

Date	Total Suspended Particulate ug/m3	Arsenic ug/m3	Copper ug/m3	Cadmium ug/m3	Lead ug/m3	Zinc ug/m3
850706	40.0	.280	.15	.020	.46	1.55
850712	51.0	.260	.31	.030	.89	1.74
850718	74.0	.740	.29	.070	2.16	5.05
850724	51.0	.240	.50	.060	1.99	3.75
850730	69.0	.240	.18	.050	1.49	4.91
850805	46.0	.140	.21	.060	1.28	3.73
850811	29.0	.250	.52	.040	.67	1.23
850817	103.0	1.970	1.23	.180	3.44	9.10
850829	103.0	2.010	.30	.160	5.08	7.83
850904	53.0	.330	.19	.070	1.72	3.32
850910	61.0	.500	.19	.240	3.83	4.72
850916	16.0	.024	.10	.010	.25	.37
850922	58.0	.540	.18	.110	3.06	4.07
850928	49.0	.280	.13	.100	1.98	2.58
851004	62.0	.290	.24	.090	2.37	3.05
851010	32.0	.330	.12	.030	.62	.87
851016	22.0	.200	.11	.030	.60	1.00
851022	14.0	.034	.09	.010	.12	.20
851028	39.0	.340	.09	.050	1.14	4.28
851103	44.0	.450	.10	.020	1.11	1.29
851109	24.0	.240	.05	.020	.46	.66
851115	76.0	.570	.10	.050	1.91	1.86
851121	54.0	.630	.08	.050	1.52	2.13
851127	50.0	1.200	.06	.130	3.12	2.47
851203	25.0	.117	.07	.020	.50	.49
851209	62.0	.320	.09	.080	2.29	2.30
851215	16.0	.004	.06	.010	.14	.14
851221	18.0	.013	.06	.010	.17	.08
851226	26.0	.082	.08	.010	.47	.38

SUSPENDED PARTICULATE DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
750905	73.0	5.10	3.91	.190
750911	49.0	1.42	2.14	.090
750917	35.0	2.29	3.15	.060
750923	168.0	10.62	9.26	.390
750929	51.0	2.91	2.13	.160
751005	58.0	1.16	4.83	.140
751011	40.0	1.84	5.15	.510
751017	103.0	5.18	4.75	.280
751023	122.0	4.98	6.23	.230
751029	139.0	2.53	1.09	.110
751105	32.0	1.42	1.06	.020
751110	40.0	2.87	1.52	.030
751116	42.0	.55	.18	.020
751122	61.0	2.12	1.24	.110
751129	204.0	8.65	3.98	.330
751204	155.0	5.09	2.54	.090
751210	73.0	3.71	2.47	.100
751216	329.0	12.24	8.44	.380
751222	65.0	1.15	.57	.020
751228	23.0	.42	.42	.020
760103	37.0	1.17	.39	.020
760109	38.0	1.76	3.14	.020
760115	57.0	1.06	.46	.020
760121	148.0	4.89	1.79	.130
760128	75.0	3.44	2.35	.140
760202	111.0	1.34	.67	.050
760208	104.0	2.42	1.49	.090
760214	77.0	.82	.20	.020
760220	15.0	1.00	.06	.040
760226	67.0	3.71	2.73	.160
760303	61.0	2.01	4.01	.040
760309	82.0	.93	.56	.040
760315	187.0	5.45	3.95	.240
760321	75.0	1.07	1.07	.020
760327	289.0	7.76	34.90	1.110
760402	132.0	2.76	2.02	.150
760408	71.0	1.57	1.97	.050

SUSPENDED PARTICULATE DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
760414	19.0	.39	7.80	.160
760421	66.0	1.83	2.20	.060
760427	79.0	1.45	1.81	.020
760503	93.0	3.59	3.25	.120
760509	76.0	1.42	1.95	.070
760515	58.0	1.71	2.74	.070
760521	30.0	1.12	1.34	.020
760527	120.0	2.53	11.40	.200
760602	71.0	1.40	1.75	.070
760608	196.0	3.29	28.03	.330
760614	54.0	.84	.84	.050
760620	46.0	.92	.92	.050
760626	50.0	1.34	1.34	.050
760702	57.0	1.70	2.08	.080
760708	47.0	1.84	1.66	.070
760714	54.0	1.69	2.26	.060
760720	75.0	4.61	1.92	.670
760726	86.0	4.78	7.36	.170
760807	62.0	.78	1.55	.060
760813	67.0	.64	.64	.040
760819	58.0	.60	.40	.020
760831	66.0	2.28	11.10	.070
760907	37.0	2.04	2.22	.800
760913	85.0	5.73	4.12	.180
760918	81.0	1.32	1.13	.050
760924	48.0	1.37	1.37	.050
760930	92.0	3.98	3.32	.090
761006	35.0	1.70	1.48	.450
761012	75.0	1.74	1.09	.220
761018	110.0	2.55	2.81	.080
761030	80.0	2.36	4.87	.130
761206	22.0	.71	.48	.020
761212	62.0	1.55	1.03	.080
761218	85.0	1.99	2.45	.100
761224	21.0	.68	.23	.020
761230	33.0	.24	.24	.020

SUSPENDED PARTICULATE DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
770105	131.0	3.15	1.47	.130
770111	167.0	3.84	1.21	.080
770117	42.0	.64	.43	.060
770123	62.0	.65	.43	.060
770129	114.0	2.29	1.02	.080
770204	104.0	1.35	1.13	.050
770210	98.0	2.54	1.69	.030
770216	116.0	5.33	3.33	.110
770222	54.0	.68	.45	.070
770228	245.0	2.26		.280
770306	28.0	.37	.37	.060
770312	32.0	.92	9.75	.170
770318	89.0	1.72	12.47	.190
770324	66.0	2.37	1.72	.060
770330	75.0	2.51	2.51	.060
770405	72.0	2.82	3.60	.110
770411	36.0	2.88	2.27	.060
770417	54.0	3.14	2.51	.080
770423	44.0	1.17	2.57	.070
770429	85.0	3.30	1.89	.070
770505	81.0	3.15	1.45	.070
770511	35.0	.93	1.39	.070
770517	115.0	1.63		.190
770523	42.0	.67	1.12	.070
770529	22.0	1.13	.91	.070
770604	46.0	1.87	1.87	.070
770610	66.0	2.80	1.27	.070
770616	123.0	3.51	4.91	.070
770622	67.0	3.51	3.04	.070
770628	40.0	4.10	4.79	.090
770704	22.0	1.09	1.64	.030
770711	78.0	4.83		
770716	88.0	3.89	7.78	.070
770722	33.0	1.26	6.02	.080
770728	28.0	3.04	3.74	.070
770803	44.0	3.79	5.68	.190
770809	46.0	2.29	3.27	.100
770816	13.0	.91	1.34	.060

SUSPENDED PARTICULATE DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
770821	35.0	2.93		.120
770827	7.0	.47	1.41	.020
770902	36.0	1.67	1.90	.070
770910	15.0	1.36	1.81	.070
770914	204.0	2.26	26.98	.130
770920	45.0	2.17	1.45	.120
770926	31.0	4.58	33.20	.070
771003		9.32	11.65	.350
771008	10.0	1.62	.86	.060
771014	67.0	2.65	2.65	.080
771020	102.0	6.02	4.02	.130
771026	85.0	6.69	3.82	.380
771101	51.0	2.98	1.60	.110
771107	48.0	2.63	1.20	.240
771113	3.0	.83	.55	.140
771126	96.0	3.72	3.46	.080
771201	53.0	1.59	.53	.080
771207	83.0	5.83	4.37	.120
771214	170.0	11.40	6.10	.340
771219	172.0	9.32	7.89	.500
771224	99.0	2.65	2.89	.070
771231	31.0	1.96	1.31	.070
780106	76.0	.76	.51	.080
780112	85.0	2.07	2.30	.070
780118	84.0	2.22	1.98	.070
780124	84.0	2.41	2.05	.070
780130	47.0	.70	.59	.020
780205	158.0	1.63		.150
780211	191.0	6.86	4.41	.200
780217	108.0	.96	.48	.020
780223	92.0	5.48	3.83	.150
780301	128.0	5.24	4.45	.130
780307	80.0	4.29	3.48	.110
780314	124.0	9.18	7.69	.300
780319	180.0	4.57	7.37	.180
780331	86.0	1.89	4.62	.080

SUSPENDED PARTICULATE DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
780406	78.0	.97	.71	.040
780412	66.0	2.17	3.37	.070
780418	66.0	1.98	2.73	.100
780424	50.0	3.61	5.28	.060
780430	74.0	2.94	2.70	.070
780506	107.0	.25	.25	.070
780512	86.0	1.33	2.89	.070
780518	9.0			.030
780524		1.22	1.62	.040
780530	134.0	5.07	4.29	.200
780605	168.0	6.38	5.93	.210
780611	36.0	2.44	1.62	.120
780617	63.0	1.26	1.26	.050
780623	122.0	2.87	3.59	.140
780629	79.0	.41	.27	.030
780705	78.0	1.26	1.01	.050
780711	52.0	2.23	2.98	.070
780717	33.0	2.30	1.79	.080
780724	79.0	4.44	3.03	.120
780729	62.0	4.14	9.32	.100
780804	37.0	3.89	6.48	.090
780810	89.0	1.02	1.02	.030
780817	31.0	.48	.72	.020
780823	42.0	1.76	1.26	.080
780829	80.0	5.70	15.02	.700
780903	73.0	3.37	2.33	.130
780909	62.0	3.67	2.10	.210
780915	100.0	8.48	6.43	.150
780921	3.0	.50	.50	.030
781004	60.0	4.40	3.37	.100
781010	113.0	2.97	3.56	.090
781015	59.0	1.52	2.28	.030
781021	52.0		12.70	.290
781027	33.0	2.19	4.60	.070
781102	60.0	5.00	4.00	.160
781108	102.0	8.39	12.35	.420
781114	313.0	49.10	23.20	.920
781120	37.0	.60	.91	.030

SUSPENDED PARTICULATE DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
781125	105.0	4.52	2.93	.110
781202	27.0	.76	.25	.050
781208	67.0	.54	.27	.020
781214	60.0	.55	.28	.030
781220	47.0	.54	.27	.030
781226	148.0	8.51	4.86	.300
790103	49.0	7.30	10.80	.230
790108	29.0	.26	.26	.030
790115	41.0	.23	.45	.020
790120	129.0	6.35	3.04	.300
790126	46.0	1.26	.75	.030
790201	168.0	8.22	3.96	.270
790207	84.0	3.46	2.22	.120
790214	80.0	1.15	.87	.030
790219	33.0	1.14	1.14	.030
790225	88.0	3.37	1.22	.150
790303	238.0	6.29	2.57	.170
790309	170.0	5.42	3.20	.100
790315	128.0	5.78	5.46	.350
790321	110.0	4.75	3.70	.080
790402	99.0	5.54	2.22	.140
790408	76.0	2.77	3.00	.070
790414	106.0	1.63	1.90	.050
790420	77.0	2.43	2.65	.070
790426	173.0	5.50	6.30	.110
790502	95.0	3.11	3.11	.060
790509	83.0	2.46	2.46	.040
790515	64.0	3.30	3.30	.020
790520	89.0	2.60	4.90	.030
790526	123.0	1.30	1.50	.080
790601	120.0	3.30	3.00	.100
790607	105.0	4.77	7.95	.110
790613	56.0	3.35	5.98	.430
790619	59.0	.33	.33	.160
790625	81.0	2.64	3.84	.100
790701	19.0	1.12	.90	.020

SUSPENDED PARTICULATE DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
790707	114.0	6.60	3.90	.320
790713	108.0	7.19	5.21	.290
790719	76.0	2.10	1.57	.050
790725	61.0	4.20	4.20	.220
790731	55.0	1.20	.86	.030
790807	58.0	3.95	.49	.740
790812	82.0	3.04	3.04	.130
790818		3.63	4.14	.100
790824	110.0	2.03	2.03	.100
790830	50.0	1.30	1.04	.050
790905	106.0	4.70	4.40	.290
790911	84.0	8.90	4.70	.370
790917	100.0	2.80	3.20	.110
790924	159.0	6.80	16.90	.250
790929	78.0	2.40	3.10	.100
791005	132.0	.74	.74	.020
791011	45.0	1.94	2.80	.060
791017	44.0	3.64	7.21	.120
791024	120.0	7.62	5.44	.350
791030	56.0	6.43	12.06	.280
791105	77.0	2.73	3.90	.040
791110	150.0	12.24		.580
791116	93.0	3.23	1.08	.130
791128	132.0	4.34	2.53	.070
791204	60.0	1.13	.85	.030
791212	50.0	3.25	9.28	.190
791217	91.0	3.52	2.20	.070
791222	145.0	3.44	2.01	.090
791228	255.0	6.76	10.87	.190
800103		1.71	.64	.040
800109	85.0	1.08	.81	.030
800115	110.0	4.38	1.64	.110
800121	117.0	5.34	4.41	.190
800127	108.0	9.38	2.68	.210
800202	263.0	9.31	26.80	.820
800208	68.0	2.97	2.16	.190
800214	46.0	2.33	1.04	.260
800220	68.0	3.25	1.00	.020

SUSPENDED PARTICULATE DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
800226	50.0	2.88	1.57	.030
800303	73.0	3.71	1.16	.070
800309	56.0	.25	.25	.030
800315	94.0	1.60	2.13	.030
800321	152.0	7.52	5.83	.130
800327	146.0	7.96	3.98	.130
800402	102.0	5.27	4.49	.120
800409	107.0	2.14	8.04	.080
800414	120.0	3.62	1.09	.220
800420	109.0	3.20	2.63	.080
800426	136.0	7.07	3.53	.130
800503	129.0	2.55	2.37	.040
800508	208.0	4.36	9.50	.260
800514	132.0	2.87	3.63	.080
800520	558.0	4.87	5.92	.090
800526	55.0	.45	.45	.040
800601	112.0	1.00	1.00	.020
800607	55.0	2.72	.27	.080
800613	88.0	4.73	2.65	.090
800619	115.0	4.34	4.34	.090
800625	17.0	.13	.13	.010
800806	65.0	2.01	2.21	.080
800812	107.0	3.37	3.93	.090
800818	90.0	1.51	.76	.020
800824	70.0	4.49	5.07	.140
800830	81.0	3.32	2.54	.160
800905	161.0	7.35	6.87	.400
800911	114.0	4.03	6.28	.180
800919	145.0	.57	1.15	.030
800929	279.0	4.18	26.22	.440
801004	205.0	6.53	3.67	.220
801011	134.0	7.59	4.51	.180
801017	110.0	9.15	3.12	.210
801029	131.0	5.98	6.36	.280
801104	104.0	4.24	3.84	.140
801110	56.0	2.63	1.69	.060

SUSPENDED PARTICULATE DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
801116	68.0	3.25	4.34	.110
801122	29.1	2.74	2.53	.110
801128	94.0	1.71	5.35	.040
801204	16.0	.22	.22	.020
801210	44.0	.58	.19	.020
801216	43.0	3.72	2.16	.160
801222	86.0	1.03	.21	.040
801228	122.0	1.63	.82	.020
810103	15.0	1.41	1.41	.040
810109	158.0	4.14	3.12	.120
810116	46.0	.41	.61	.020
810121	9.0	1.79	2.86	.090
810127	110.0	.97	2.72	.080
810202	122.0	3.74	3.74	.120
810208	100.0	7.06	3.64	.430
810214	44.0	1.07	.21	.020
810220	68.0	.85	1.22	.140
810226	106.0	2.05	2.46	.060
810304	163.0	1.20	2.40	.240
810310	153.0	2.98	1.57	.190
810316	77.0	2.68	3.40	.090
810321	134.0	3.50	5.04	.180
810328	74.0	2.08	1.04	.100
810403	109.0	16.15	5.18	.410
810410	79.0	4.22	2.48	.200
810416	82.0	2.47	4.12	.060
810427	94.0	1.52	1.74	.070
810503	54.0	1.82	2.00	.060
810505	108.0	.47	9.44	.090
810521	89.0	.42	.63	.020
810527	126.0	1.60	2.14	.050
810602	68.0	.34	.67	.020
810608	61.0	.63	.63	.020
810614	91.0	3.24	2.81	.110
810620	71.0	3.63	2.21	.090
810627	80.0	1.42	1.22	.020

SUSPENDED PARTICULATE DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
810702	151.0	9.82	8.99	.500
810714	91.0	2.30	1.88	.130
810720	132.0	5.08	3.08	.180
810726	80.0	9.40	4.14	.320
810801	69.0	3.04	2.66	.080
810807	81.0	3.49	5.82	.080
810813	106.0	6.05	4.75	.090
810819	238.0	6.97	27.68	.510
810825	116.0	4.36	3.96	.080
810901	100.0	2.81	2.97	.120
810906	91.0	1.68	2.80	.060
810912	101.0	3.01	4.70	.130
810918	190.0	6.42	7.87	.270
810924	65.0	1.52	1.52	.060
810930	89.0	3.21	1.93	.240
811006	52.0	1.84	3.06	.060
811012	18.0	4.20	7.80	.160
811018		10.46	4.51	.340
811024	115.0	5.02	3.86	.150
811030	101.0	2.28	1.27	.030
811105	73.0	1.49	1.66	.020
811111	89.0	3.61	4.64	.170
811117	143.0	2.13	2.93	.270
811123	23.0	1.80	1.58	.110
811129	7.0	.35	.17	.020
811205	60.0	4.48	1.79	.090
811211	113.0	3.24	3.04	.080
811217	37.0	1.63	1.43	.060
811223	65.0	1.13	.68	.020
811229	127.0	2.02	5.70	.280
820104	31.0	.99	2.36	.060
820111	62.0	1.09	1.09	.060
820116	89.0	2.59	1.88	.070
820122	63.0	1.22	1.74	.050
820128	53.0	1.19	1.19	.060
820203	77.0	3.09	2.21	.110
820209	114.0	4.62	2.52	.130
820215	82.0	10.50	4.03	.470

SUSPENDED PARTICULATE DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
820221	181.0	3.49	4.36	.150
820227	164.0	3.09	2.47	.120
820305	270.0	10.32	9.12	.430
820311	91.0	3.86	3.65	.140
820317	109.0	12.26	6.91	.360
820323	103.0	3.86	4.23	.080
820329	45.0	.65	.98	.020
820404	32.0	.91	.91	.020
820410	98.0	1.00	1.60	.020
820416	77.0	2.19	2.19	.180
820424	137.0	3.94	3.94	.160
820428	96.0	1.08	9.24	.140
820504	82.0	4.42	11.90	.260
820516	94.0	3.83	3.62	.260
820522	95.0	2.69	3.94	.200
820528	86.0	7.31	6.29	.360
820604	103.0	3.46	3.26	.170
820609	127.0	2.66	2.89	.110
820616	126.0	3.28	4.10	.160
820621	152.0	3.14	2.91	.090
820627	98.0	1.24	2.90	.040
820808	159.0	3.48	3.48	.060
820814	112.0	2.87	3.51	.060
820820	114.0	1.46	11.40	.100
820827	94.0	1.60	3.18	.060
820901	76.0	1.24	1.65	.040
820907	55.0	2.77	2.08	.070
820913	100.0	8.63	9.96	.430
820919	71.0	.77	3.06	.030
820925	327.0	1.21	20.20	.200
821001	81.0	2.38	2.77	.120
821007	58.0	5.20	3.38	.290
821013	76.0	1.93	6.56	.080
821019	58.0	1.57	3.29	.060
821025	44.0	1.85	4.53	.100
821031	30.0	1.15	.92	.050

SUSPENDED PARTICULATE DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
821106	37.0	.65	2.83	.040
821112	95.0	1.62	1.39	.070
821124	198.0	4.43	15.83	.270
821130	109.0	7.76	4.27	.450
821206	66.0	1.28	1.54	.050
821212	81.0	5.50	2.20	.260
821218	35.0	1.36	.23	.020
821224	139.0	3.99	2.66	.050
821230	163.0	5.55	3.80	.090
830105	104.0	3.22	3.22	.080
830112	270.0	44.22	9.80	1.630
830118	149.0	6.92	6.92	.170
830124	72.0	4.61	6.34	.120
830130	75.0	.66	1.11	.020
830204	51.0	1.46	1.71	.050
830210	60.0	2.08	1.30	.080
830216	119.0	3.35	2.51	.110
830222	137.0	4.45	3.28	.190
830228	113.0	3.39	2.94	.140
820306	60.0	1.64	1.87	
830312	105.0	1.56	12.27	
830318	141.0	5.58	7.14	
830324	107.0	3.49	5.45	
830330	100.0	3.87	10.65	
830405	273.0	23.76	52.92	.780
830411	58.0	3.52	5.18	.150
830417	91.0	4.99	8.32	.230
830429	118.0	5.81	8.21	.240
830505	132.0	2.72	6.98	.160
830511	114.0	4.09	8.87	.170
830517	75.0	3.63	3.27	.110
830523	124.0	2.73	4.46	.120
830529	122.0	4.06	5.59	.080
830604	131.0	6.14	6.14	.130
830610	217.0	1.04	14.30	.310
830614	109.0	.62	2.49	.030
830620	99.0	1.57	3.14	.040
830622	142.0	5.09	8.21	.170

SUSPENDED PARTICULATE DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
830628	75.0	1.00	1.60	.040
830704	140.0	4.25	11.70	.210
830710	38.0	3.03	7.16	.140
830716	91.0	2.55	5.09	.150
830723	210.0	6.27	12.21	.260
830728	87.0	2.78	6.48	.120
830803	150.0	.92	1.84	.030
830810	127.0	.66	1.33	.030
830815	85.0	.81	2.15	.030
830821	124.0	1.66	5.96	.030
830827	148.0	3.43	27.27	.300
830902	76.0	3.42	4.28	.090
830908	70.0	1.46	4.66	.120
830914	121.0	7.86	9.83	.260
830920	136.0	10.73	17.16	.630
830926	62.0	2.92	2.19	.130
831002	76.0	7.65	2.25	.110
831008	155.0	8.32	6.76	.180
831014	103.0			
831020	100.0	2.42	4.40	.070
831026	113.0	5.10	3.28	.160
831101	69.0	1.41	5.64	.170
831107	68.0	.24	3.76	.020
831113	30.0	.52	2.34	.010
831119	43.0	1.89	3.37	.060
831125	6.0	.42	.56	.010
831201	88.0	3.87	8.20	.130
831219	100.0	12.99	6.37	.770
831225	35.0	.98	.86	.020
831231	62.0	.73	.55	.020
840105	35.0	2.56	1.07	.170
840112	105.0	2.04	4.96	.090
840118	166.0	3.00	4.90	.080
840124	6.0	.16	.32	.020
840130	72.0	1.27	3.30	.040
840205	77.0	1.36	2.18	.050

SUSPENDED PARTICULATE DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
820211	18.0	3.83	1.99	.170
840217	67.0	3.55	4.29	.130
840223	39.0	.88	3.23	.030
840229	161.0	7.02	8.71	.340
840312	31.0	1.65	.71	.020
840318	11.0	1.25	.62	.070
840324	158.0	3.61	18.45	.190
840330	72.0	6.55	4.98	.260
840405		1.78	1.55	.040
840411	92.0	1.43	1.69	.050
840417	70.0	1.73	2.13	.050
840423	56.0	3.01	5.11	.110
840429	91.0	3.38	1.90	.080
840505	101.0	.56	2.22	.040
840511	81.0	1.71	1.71	.060
840517	61.0	1.92	3.35	.110
840523	71.0	1.78	2.11	.100
840529	98.0	4.33	4.73	.160
840604	181.0	1.80	4.99	.100
840610	49.0	1.32	2.35	.070
840616	70.0	1.38	2.24	.030
840622	57.0	1.36	2.42	.040
840705	49.0	2.04	2.89	.030
840711	89.0	4.02	8.34	.130
840717	76.0	4.54	3.59	.130
840723	72.0	1.30	3.04	.020
840729	81.0	.33	1.00	.030
840803	54.0	.86	1.43	.030
840809	66.0	3.66	5.09	.080
840815	55.0	4.49	3.56	.080
840821	54.0	3.31	4.03	.090
840827	50.0	2.86	3.00	.090
840908	61.0	3.33	3.84	.090
840914		.14	.14	.010
840920	25.0	.70	1.23	.040
840926	34.0	.87	1.61	.040

SUSPENDED PARTICULATE DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
841002	106.0	3.04	4.75	.160
841008	75.0	4.06	6.03	.160
841014	90.0	2.52	5.29	.100
841020	112.0	4.31	7.88	.210
841026	81.0	.94	1.60	.040
841101	43.0	1.80	1.80	.050
841107	66.0	3.57	2.42	.080
841119	33.0	2.01	1.42	.100
841125	49.0	2.95	2.36	.100
841201	30.0	1.01	.67	.020
841207	125.0	.41	.28	.010
841213	8.0	.25	.13	.010
841219	24.0	.43	.43	.010
841225	17.0	.76	.38	.030
850106	23.0	.39	.51	.030
850112	26.0	.57	.34	.020
850118	341.0	4.21	3.06	.220
850124	43.0	.61	.61	.020
850130	83.0	1.61	2.19	.090
850205	58.0	3.05	2.39	.090
850211	33.0	1.22	.87	.070
850217	46.0	.85	.04	.020
850223	18.0	.12	.12	.010
850301	75.0	4.41	3.52	.120
850307	57.0	1.59	.71	.070
850313	138.0	4.09	4.94	.210
850319	56.0	.52	.52	.010
850325	44.0	.65	1.04	.040
850331	40.0	2.22	2.35	.130
850406	53.0	.81	1.62	.050
850412	48.0	.84	2.93	.210
850418	115.0	2.84	3.06	.040
850424	27.0	1.20	1.20	.030
850430	52.0	1.05	1.05	.050
850506	16.0	2.47	2.61	.080
850512	44.0	2.37	2.97	.160
850518	61.0	3.98	3.86	.190
850524	69.0	1.36	4.24	.070

SUSPENDED PARTICULATE DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
850530	95.0	.57	.57	.030
850605	80.0	1.27	5.91	.080
850611	68.0	2.99	1.96	.120
850617	65.0	3.15	3.67	.090
850623	29.0	.83	1.24	.030
850629	42.0	.79	2.36	.030
850705	68.0	.51	.68	.020
850711	46.0	1.10	.95	.030
850717	35.0	1.97	3.18	.050
850723	52.0	2.28	4.11	.060
850729	60.0	3.36	6.72	.070
850804	59.0	1.48	3.81	.040
850810	54.0	1.95	4.32	.140
840816	64.0	3.79	4.23	.170
850822	67.0	2.56	3.24	.120
850828	103.0	4.87	6.12	.170
850903	51.0	1.92	3.15	
850910	39.0	1.31	1.90	.060
850915	29.0	.25	.25	.010
850921	46.0	6.29	3.08	.240
850927	46.0	4.97	2.88	.220
851003	38.0	1.30	1.68	.070
851009	18.0	.14	.14	.010
851015	8.0	.41	.41	.020
851021	25.0	.89	.76	.020
851027	73.0	3.65	5.26	.100
851102	31.0	.48	.65	.020
851108	34.0	.94	1.41	.050
851114	70.0	3.83	3.21	.090
851120		2.71	1.49	.070
851126	13.0	.84	1.91	.020
851202	9.0	.58	.72	.030
851208	26.0	.51	.64	.030
851214	61.0	.46	.46	.010
851220	29.0	.46	.30	.020
851226	31.0	1.20	1.92	.050

SUSPENDED PARTICULATE DATA

WARFIELD SUBSTATION

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
750905	53.0	1.52	.97	.030
750911	17.0	.27	.13	.010
750917	13.0	.31	.15	.020
750923	150.0	3.66	2.70	.080
750929	55.0	.31	.31	.030
751005	20.0	.14	.14	.030
751011	17.0	.13	.40	.010
751023	90.0	5.02	3.30	.200
751029	69.0	6.28	2.63	.260
751105	50.0	2.56	1.10	.070
751110	74.0	3.44	1.48	.090
751116	65.0	6.00	1.65	.080
751122	83.0	3.75	1.00	.130
751129	153.0	5.25	2.42	.240
751204	274.0	6.24	5.20	.180
751210	68.0	1.35	.81	.030
751216	245.0	5.89	3.88	.190
751222	65.0	1.12	.56	.040
751228	175.0	1.88	1.33	.170
760103	24.0	1.05	.35	.020
760109	11.0	.54	.27	.010
760115	290.0	3.59	2.28	.200
760121	231.0	3.55	1.69	.170
760127	170.0	4.41	3.09	.260
760202	53.0	.66	.26	.040
760208	93.0	.79	.63	.050
760214	45.0	.48	.16	.020
760220	276.0	5.24	4.30	.240
760226	27.0	1.10	.63	.060
760303	29.0	2.06	.41	.020
760315	160.0	4.35	3.97	.240
760321	69.0	.57	.38	.020
760327	279.0	3.71	25.34	.330
760402	188.0	3.31	2.78	.210
760408	112.0	1.23	1.05	.050
760414	3.0	.43	1.44	.040
760420	51.0	.41	.41	.010

SUSPENDED PARTICULATE DATA

WARFIELD SUBSTATION

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
760427	56.0	.65	1.03	.010
760503	103.0	1.46	1.10	.060
760509	114.0	.65	1.04	.050
760515	48.0	.40	.79	.030
760521	61.0	.65	.65	.050
760527	69.0	.69	.69	.020
760602	45.0	.15	.15	.010
760608	42.0	1.10	.98	.060
760614	64.0	2.00	2.00	.100
760620	23.0	.39	.39	.010
760626	64.0	1.11	1.11	.050
760702	29.0	.61	.73	.040
760708	40.0	1.75	1.50	.100
760714	29.0	.13	.26	.010
760720	58.0	2.63	1.63	.110
760726	70.0	1.45	2.54	.080
760801	46.0	.60	1.04	.040
760807	58.0	.40	.20	.040
760813	50.0	.91	.76	.030
760819	41.0	.40	.13	.010
760825	42.0	1.07	2.98	.060
760831	87.0	.93	1.48	.040
760907	23.0	.14	.14	.030
760913	91.0	2.21	2.08	.080
760918	83.0	.30	.15	.030
760924	31.0	.26	.13	.030
760930	84.0	1.45	1.45	.030
761006	29.0	.14	.14	.030
761012	215.0	2.23	1.70	.110
761018	108.0	2.27	1.36	.080
761024	91.0	2.90	1.86	.090
761030	118.0	3.87	2.58	.120
761206	148.0	2.03	1.16	.070
761212	115.0	2.37	1.04	.100
761218	245.0	2.07	1.33	.100
761224	61.0	1.68	.48	.050
761230	2.0	.15	.15	.020

SUSPENDED PARTICULATE DATA

WARFIELD SUBSTATION

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
770105	80.0	2.99	1.43	.100
770111	111.0	2.99	1.04	.050
770117	269.0	4.50	1.38	.070
770123	29.0	.07	.07	.040
770129	153.0	3.75	1.95	.070
770204	81.0	1.17	1.31	.030
770210	384.0	4.93	10.21	.120
770216	145.0	4.35	2.32	.150
770222	14.0	.44	.15	.040
770228	113.0	1.46	.80	.040
770306	30.0	.27	.27	.040
770312	66.0	.43	1.73	.120
770318	27.0	.55	.55	.040
770324	57.0	2.15	1.13	.070
770330	68.0	1.63	2.18	.040
770405	76.0	.83	.83	.040
770411	22.0	.28	.28	.030
770417	95.0	3.93	6.29	.110
770423	22.0	.16	.16	.050
770429	70.0	1.09	.93	.050
770505	39.0	.44	.15	.040
770511	28.0	.29	.29	.040
770517	7.0	.29	.44	.040
770523	29.0	.28	.14	.040
770529	27.0	.50	.50	.040
770604	25.0	.44	.74	.040
770610	45.0	.71	.36	.050
770616	89.0	1.06	.76	.050
770622	48.0	.47	.32	.050
770628	26.0	.43	.43	.010
770704	26.0	.46	.46	.020
770711	55.0	.29	1.00	.010
770716	52.0	1.11	.95	.050
770722	76.0	1.57		.050
770728	47.0	.84	.98	.040
770803	1.0	.32	.16	.050
770809	12.0	.16	.32	.050
770816	14.0	.31	.47	.050

SUSPENDED PARTICULATE DATA

WARFIELD SUBSTATION

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
770821	25.0	.91	4.29	.040
770827	7.0	.30	.30	.050
770902	25.0	.55	.55	.050
770910	6.0	.08	.08	.050
770914	88.0	.68	8.48	.110
770920	54.0	.34	.89	.110
770926	49.0	3.08	1.40	.070
771003	62.0	.42	.50	.050
771008		1.56	.89	.040
771014	19.0	.16	.24	.050
771020	36.0	1.52	1.21	.050
771026	89.0	.28	1.88	.140
771107	36.0	1.70	.68	.170
771113	3.0	.95	.68	.070
771119	12.0	1.62	2.21	.120
771126	105.0	5.61	3.23	.200
771201	169.0	5.54	9.24	.220
771207	40.0	.47	.24	.070
771214	117.0	9.60	2.24	.210
771219	101.0	6.05	5.04	.270
771224	20.0	.45	.30	.050
771231	4.0	.14	.14	.040
780106	44.0	1.51	.60	.050
780112	49.0	.77	.46	.050
780118	26.0	.30	.08	.020
780124	228.0	9.00	20.25	.360
780130	35.0	.07	.07	.010
780205	47.0	.21	.21	.010
780211	85.0	1.12	.56	.040
780217	210.0	1.90	1.02	.070
780223	35.0	.87	.35	.070
780301	65.0	.82	.41	.020
780307	186.0	5.44	2.72	.130
780314	155.0	4.35	3.86	.160
780319	147.0	2.60	2.30	.180
780331	61.0	.60	.45	.020

SUSPENDED PARTICULATE DATA

WARFIELD SUBSTATION

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
780406	4.0	.30	.15	.010
780412	35.0	.75	1.04	.050
780418	26.0	.30	.30	.030
780424	4.0	.15	.15	.020
780430	31.0	.26	.26	.010
780506	53.0	.15	.15	.040
780512	39.0	.83	.83	.040
780518		.19	.19	.020
780524		.84	.42	.020
780530	38.0	.47	.16	.020
780605	96.0	2.18	.87	.100
780611	21.0	.80	.20	.060
780617	24.0	.17	.35	.020
780623	59.0	.31	.46	.030
780629	81.0	1.28	.73	.050
780705	55.0	1.22	.76	.060
780717	39.0	2.70	2.37	.080
780724	94.0	4.64	2.56	.160
780729	32.0	1.61	1.61	.060
780804	24.0	1.13	1.62	.030
780810	55.0	.34	.34	.020
780817	12.0	.50	.50	.030
780823		.68	.34	.020
780829	64.0	5.54	14.71	.310
780903	58.0	2.15	.99	.130
780909	20.0	.56	.19	.020
780915	64.0	1.54	1.20	.050
780921		.68	.51	.030
781004	97.0	6.52	3.26	.210
781010	76.0	2.48	1.66	.120
781015	70.0	.32	.32	.020
781021		1.88	2.09	.150
781027	89.0	3.19	3.53	.080
781102	119.0	9.82	7.70	.360
781108	53.0	.98	.78	.020
781114	131.0	27.30	3.98	.290
781120	5.0	.20	.20	.020
781125	74.0	3.54	2.70	.150

SUSPENDED PARTICULATE DATA

WARFIELD SUBSTATION

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
781202	18.0	1.53	.57	.060
781208	90.0	1.45	.62	.020
781214	47.0	.42	.21	.040
781220	42.0	.59	.20	.020
781226	390.0	9.37	8.25	.380
790103	18.0	1.99	1.81	.040
790108	19.0	.19	.19	.020
790115	18.0	.18	.18	.020
790120	214.0	12.92	7.03	.420
790126	88.0	1.29	.65	.090
790201	243.0	4.45	1.64	.160
790207	57.0	3.99	1.89	.320
790214	33.0	.19	.19	.020
790219	39.0	1.18	1.38	.060
790225	109.0	3.96	1.80	.270
790303	139.0	4.68	1.95	.140
790309	99.0	2.40	1.37	.030
790315	71.0	1.15	1.31	.070
790321	43.0	.20	.20	.020
790327	27.0	.40	.20	.100
790402	138.0	9.59	4.32	.210
790408	26.0	.89	2.67	.040
790414	75.0	.63	1.06	.040
790420	44.0	.87	.69	.030
790426		1.48	1.05	.040
790502	68.0	7.40	3.00	.040
790509	56.0	.61	.81	.020
790515	54.0	1.46	1.22	.020
790520	54.0	.73	.73	.020
790526	93.0	.48	.72	.070
790601	99.0	3.20	2.30	.090
790607	106.0	1.19	1.67	.020
790613	31.0	.78	.58	.190
790619	50.0	.58	1.15	.250
790625	28.0	.43	.64	.020
790701	17.0	1.00	.60	.020

SUSPENDED PARTICULATE DATA

WARFIELD SUBSTATION

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
790707	96.0	4.46	1.56	.200
790713	91.0	5.52	1.92	.220
790719	99.0	.53	.79	.030
790725	36.0	.36	.54	.020
790731	75.0	2.34	1.04	.030
790807		1.67	2.22	.060
790812	81.0	.58	.38	.040
790818	27.0	1.13	.45	.020
790824	52.0	.74	.49	.050
790830	39.0	.80	.80	.040
790905	72.0	1.20	1.20	.070
790911	22.0	.18	.36	.020
790917	77.0	.83	.28	.030
790924	27.0	.39	.39	.020
790929	47.0	.66	.83	.050
791005	97.0	.33	.33	.030
791011	104.0	2.26	2.82	.050
791024	102.0	2.69	1.68	.080
791030	95.0	6.27	4.03	.270
791105	15.0	.10	.10	.100
791110	437.0	8.84		.560
791116	175.0	12.50	4.02	.470
791122	71.0	1.17	.85	.030
791128	74.0	1.09	.40	.020
791204	23.0	.20	.10	.010
791212	68.0	4.30	1.63	.120
791217	60.0	4.20	1.51	.080
791222	31.0	.98	.76	.020
791228	65.0	8.08	5.56	.190
800103		1.12	.45	.050
800109	61.0	1.35	1.35	.030
800115	71.0	3.06	.81	.070
800121	153.0	2.82	2.41	.110
800127	44.0	.27	.18	.010
800202	81.0	13.49	2.00	.300
800208	36.0	1.46	1.36	.030
800214	21.0	.32	.21	.010
800220	43.0	8.93	.96	.210

SUSPENDED PARTICULATE DATA

WARFIELD SUBSTATION

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
800226	82.0	2.70	.47	.040
800303	44.0	2.20	1.04	.050
800309		.50	1.09	.040
800315	69.0	2.35	.96	.040
800321	79.0	6.37	2.95	.140
800327	150.0	7.02	3.11	.150
800402	44.0	1.28	1.04	.020
800409	26.0	.75	.60	.020
800414	84.0	1.04	.69	.010
800420	64.0	2.84	1.47	.080
800426	62.0	.19	.19	.010
800503	70.0	1.47	.68	.030
800508	170.0	2.77	4.88	.080
800514	75.0	2.83	1.65	.070
800520	508.0	1.32	1.44	.050
800526	139.0	.95	.60	.050
800601	48.0	.53	.21	.010
800607	25.0	.23	.12	.010
800613	73.0	2.23	2.11	.020
800619	160.0	1.63	.75	.050
800625	70.0	1.41	1.11	.010
800806	40.0	.24	.12	.040
800812	37.0	.11	.11	.010
800818	47.0	1.07	.54	.040
800824	13.0	.22	.11	.010
800830	165.0	5.06	2.64	.220
800905	102.0	2.81	4.37	.150
800911	72.0	2.58	2.16	.100
800919	65.0	.44	.74	.270
800929	73.0	1.06	.27	.050
801004	127.0	3.12	1.17	.130
801011	121.0	3.05	.98	.110
801017	153.0	6.10	3.66	.240
801023	23.0	.27	.18	.010
801029	73.0	4.25	3.24	.220
801104	48.0	2.17	1.37	.050

SUSPENDED PARTICULATE DATA

WARFIELD SUBSTATION

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
801110	38.0	2.42	.81	.050
801116	269.0	11.10	41.20	.470
801122	29.7	2.44	2.22	.110
801128	115.0	1.25	1.14	.060
801204	28.0	.17	1.16	.050
801210	131.0	1.92	1.28	.040
801216	294.0	.27	.14	.010
801222	260.0	3.20	9.00	.120
801228	449.0	.27	1.76	.080
810103	64.0	.63	.25	.050
810109	136.0	3.22	2.36	.120
810116	42.0	.13	.13	.010
810121	11.0	.28	.14	.080
810127	40.0	.28	1.38	.040
810202	19.0	.36	.36	.010
810208	82.0	5.88	2.55	.380
810214	48.0	1.53	2.73	.050
810220	80.0	1.19	5.12	.060
810226	52.0	.26	.26	.010
810304	61.0	.53	2.00	.040
810310	77.0	.42	.56	.010
810316	107.0	1.38	1.76	.180
810321	64.0	.92	.66	.040
810328	74.0	.48	.95	.240
810403	60.0	3.61	1.94	.190
810410	67.0	2.57	1.99	.150
810416	41.0	.25	.37	.010
810421	80.0	.96	2.47	.070
810427	104.0	1.04	.65	.040
810503	32.0	.75	.75	.020
810509	140.0	2.23	1.61	.060
810515	80.0	1.06	2.11	.070
810521	77.0	.94	1.73	.050
810527	68.0	.24	.24	.010
810602	71.0	.35	2.36	.020
810608	69.0	.63	3.87	.070
810614	97.0	1.78	3.11	.070
810620	65.0	3.56	2.05	.140

SUSPENDED PARTICULATE DATA

WARFIELD SUBSTATION

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
810626	65.0	1.06	1.06	.020
810702	56.0	3.28	1.92	.170
810714	56.0	2.19	2.19	.130
810720	97.0	4.88	2.08	.180
810726	83.0	8.57	4.17	.210
810801	30.0	.33	.22	.010
810807	34.0	.22	.11	.010
810813	55.0	.71	.59	.010
810819	107.0	1.01	4.59	.040
810825	73.0	1.92	.55	.030
810901	7.0	.53	.62	.020
810906	15.0	.22	.22	.010
810912	84.0	1.32	1.92	.050
810918	107.0	2.47	2.21	.100
810924	26.0	.32	.32	.010
810930	39.0	1.49	.62	.110
811006	45.0	.14	.28	.010
811018		5.44	2.90	.240
811024	172.0	7.99	5.29	.270
811030	41.0	.59	.15	.070
811105	27.0	.27	.13	.010
811111	125.0	3.30	3.78	.120
811117	32.0	1.86	2.11	.060
811123	50.0	1.41	1.28	.060
811129	12.0	.75	.21	.020
811205	47.0	2.05	.51	.030
811211	60.0	1.24	1.12	.020
811217	15.0	.24	.12	.010
811223	195.0	4.71	3.72	.120
811229	129.0	.25	2.27	.130
820104	56.0	.99	1.98	.080
820111	187.0	5.98	4.26	.040
820116	180.0	2.10	1.18	.050
820122	69.0	2.58	3.23	.110
820128	53.0	1.25	1.25	.040
820203	45.0	3.23	1.55	.130

SUSPENDED PARTICULATE DATA

WARFIELD SUBSTATION

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
820209	281.0	8.50	3.55	.200
820215	65.0	4.35	1.41	.220
820221	200.0	4.40	4.64	.230
820227	78.0	1.13	.63	.060
820305	96.0	3.05	2.47	.120
820311	90.0	2.58	2.83	.120
820317	32.0	.12	.24	.010
820323	37.0	.47	.47	.010
820329	70.0	2.22	1.99	.090
820404	17.0	.49	.24	.010
820410	87.0	1.67	1.44	.040
820416	49.0	.42	.42	.030
820424	126.0	3.96	2.97	.210
820428	33.0	.31	.21	.020
820504	67.0	2.26	2.11	.110
820510	104.0	7.15	4.94	.470
820516	84.0	.79	.79	.060
820522	66.0	2.00	2.73	.170
820528	50.0	2.39	1.46	.090
820604	62.0	1.74	2.36	.100
820609	76.0	1.29	.82	.060
820616	60.0	.58	.58	.030
820621	126.0	3.50	2.58	.120
820627	51.0	.45	1.46	.020
820808	88.0	3.28	2.80	.130
820814	47.0	1.21	1.21	.020
820820	23.0	.21	.21	.020
820827	79.0	1.00	1.75	.050
820901	11.0	1.27	1.52	.050
820907	65.0	2.93	1.58	.110
820913	34.0	.31	.31	.030
820919	32.0	.28	.56	.030
820925	39.0	.98	2.20	.070
821001	93.0	1.98	1.74	.090
821007	25.0	2.37	.85	.070
821013	22.0	.31	.16	.020
821019	49.0	.78	2.04	.030
821025	25.0	.38	.25	.010

SUSPENDED PARTICULATE DATA

WARFIELD SUBSTATION

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
821031	60.0	1.76	1.44	.060
821106	16.0	.47	.59	.020
821112	181.0	2.46	2.80	.120
821118	100.0	.92	7.54	.090
821124	195.0	4.68	5.58	.390
821130	36.0	.78	.39	.040
821206	23.0	.12	.23	.010
821212	107.0	4.13	1.63	.190
821218	68.0	2.09	1.67	.080
821224	174.0	3.28	1.49	.070
821230	376.0	6.49	6.02	.140
830105	167.0	3.74	3.64	.100
830112	304.0	6.53	1.53	.210
830118	191.0	9.24	5.45	.210
830124	59.0	2.11	.89	.040
830130	25.0	.12	.12	.010
830204	27.0	.14	.28	.010
830210	22.0	.75	.30	.010
830216	53.0	2.04	1.09	.070
830222	84.0	2.76	1.32	.080
830228	113.0	2.98	1.79	.100
830306	67.0	1.53	1.39	
830312	40.0	.50	.37	
830318	75.0	1.58	1.74	
830324	35.0	.46	.57	
830330	65.0	1.54	3.50	
830405	102.0	3.57	16.68	.200
830411	27.0	.46	.46	.020
830417	62.0	.88	.88	.040
830423	114.0	.84	.84	.120
830429	117.0	2.16	2.16	.090
830505	56.0	.92	.79	.050
830511	44.0	.35	.18	.020
830517	62.0	2.45	1.05	.070
830523	65.0	1.17	1.48	.040
830529	64.0	.24	.24	.010

SUSPENDED PARTICULATE DATA

WARFIELD SUBSTATION

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
830604	57.0	1.75	1.90	.040
830610	144.0	.48	14.40	.100
830614	46.0	.17	.34	.020
830620	32.0	.28	.28	.010
830622	64.0	.94	2.36	.040
830628	63.0	1.65	2.60	.080
830704	52.0	.59	1.04	.050
830710	55.0	1.81	1.95	.080
830716	50.0	1.36	1.68	.080
830723	84.0	1.36	1.94	.060
830728	62.0	1.87	1.87	.180
830803	51.0	.14	.27	.010
830810	41.0	.35	.70	.020
830815	32.0	.15	.15	.020
830821	29.0	.13	.53	.010
830827	15.0	.29	.44	.010
830902	42.0	4.62	4.20	.130
830908	49.0	1.30	1.82	.050
830914	51.0	.73	1.16	.010
830920	124.0	3.45	5.24	.190
830926	54.0	1.15	1.30	.100
831002	115.0	6.15	4.31	.120
831008	208.0	8.91	5.24	.170
831014	79.0	1.49	1.76	.050
831020	78.0	2.94	2.08	.090
831026	114.0	4.37	3.68	.170
831101	25.0	.63	.50	.050
831107	22.0	.57	.23	.010
831113	23.0	1.68	1.08	.040
831119	26.0	.75	1.00	.030
831125		.40	.40	.020
831201	45.0	.73	2.07	.020
831213	54.0	2.44	2.54	.190
831219	21.0	1.04	.60	.060
831225	17.0	.12	.24	.010
831231	109.0	1.40	.53	.210
840105	257.0	9.56	6.62	.840
840112	28.0	.40	.40	.030

SUSPENDED PARTICULATE DATA

WARFIELD SUBSTATION

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
840118	108.0	.94	1.21	.030
840124	40.0	1.66	.55	.060
840130	34.0	.15	.31	.020
840205	70.0	1.84	3.06	.060
840211	42.0	1.64	.05	.050
840217	58.0	2.61	2.41	.120
840223	24.0	.88	1.03	.040
840229	42.0	11.86	9.12	.410
840312	36.0	1.58	.53	.070
840318	55.0	3.16	2.03	.120
840324	30.0	5.22	3.43	.130
840330	39.0	1.29	.72	.060
840405		.57	1.15	.030
840411	47.0	1.76	2.70	.050
840417	74.0	.72	1.15	.030
840423	13.0	.48	.72	.010
840429	95.0	.98	.56	.030
840505	41.0	.89	.71	.020
840511	49.0	1.93	1.05	.050
840517	65.0	2.00	7.99	.190
840523	53.0	2.66	2.26	.120
840529	55.0	1.23	1.65	.070
840604	51.0	1.25	.63	.090
840610	41.0	.21	.11	.010
840616	94.0	4.73	3.40	.130
840622	47.0	1.47	1.30	.050
840628	145.0	.60	1.36	.030
840705	64.0	.84	1.18	.030
840711	158.0	1.66	2.42	.060
840717	86.0	4.62	3.81	.140
840723	17.0	.43	.43	.010
840729	59.0	.90	.75	.030
840803	30.0	.16	.16	.020
840809	42.0	.73	.73	.020
840815	56.0	1.25	1.43	.040
840821	53.0	.50	.50	.020
840827	16.0	.68	.85	.020

SUSPENDED PARTICULATE DATA

WARFIELD SUBSTATION

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
840902	32.0	.60	.60	.020
840908	56.0	3.67	2.88	.090
840914		.14	.14	.010
840920	9.0	.36	.36	.020
840926	22.0	.14	.28	.010
841002	83.0	1.85	2.93	.080
841008	65.0	2.18	2.30	.100
841014	24.0	.68	.54	.030
841020	106.0	3.32	6.15	.160
841026	44.0	.84	.84	.030
841101	27.0	.22	.22	.010
841107	34.0	3.46	1.56	.070
841113	37.0	1.89	.76	.060
841119	48.0	1.92	.64	.060
841125	100.0	7.59	3.94	.250
841201	121.0	6.16	3.18	.140
841207	78.0	1.96	.70	.040
841213	9.0	.40	.27	.030
841219	80.0	1.44	1.32	.040
841225	64.0	2.69	.71	.090
841231	26.0	.46	.46	.020
850106	10.0	.13	.13	.010
850112	54.0	1.82	.85	.090
850118	221.0	4.60	3.34	.250
850124	40.0	.76	.63	.030
850130	44.0	.26	.40	.010
850205	136.0	3.53	3.10	.100
850211	76.0	2.57	.98	.170
850217	93.0	2.73	1.53	.070
850223	18.0	.45	.30	.020
850301	12.0	.20	.20	.020
850307	180.0	2.43	1.50	.130
850313	127.0	3.58	3.43	.160
850319	71.0	2.00	1.06	.080
850325	49.0	.61	.49	.020
850331	77.0	4.02	2.56	.190
850406	35.0	.15	.15	.010
850412	66.0	2.63	1.90	.160

SUSPENDED PARTICULATE DATA

WARFIELD SUBSTATION

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
850418	14.0	.12	.23	.010
850424	19.0	1.60	1.20	.110
850430	84.0	.47	.58	.050
850506	50.0	2.61	.98	.110
850512	61.0	4.75	3.75	.310
850518	97.0	2.12	1.32	.090
850524	42.0	.30	.46	.020
850530	92.0	1.45	1.21	.050
850605	42.0	1.81	1.12	.070
850611	79.0	2.07	.98	.090
850617	39.0	.15	.15	.020
850623	37.0	.32	2.89	.020
850629	49.0	.42	.70	.010
850705	59.0	.31	.31	.020
850711	47.0	1.87	1.12	.060
850717	37.0	.17	.33	.010
850723	38.0	.41	.68	.010
850729	37.0	.15	.29	.020
850804	110.0	2.08	12.01	.140
850810	30.0	.93	1.12	.060
850816	56.0	1.46	1.19	.070
850822	78.0	1.34	1.71	.050
850828	38.0	1.07	1.53	.080
850903	50.0	1.00	1.00	.030
850910	30.0	.15	.30	.020
850915	27.0	.21	.10	.010
850921	73.0	6.74	2.21	.220
850927	42.0	2.58	1.34	.120
851003	32.0	.27	4.00	.010
851009	16.0	.43	.43	.010
851015	12.0	1.03	.44	.040
851021	20.0	.54	.36	.020
851027	68.0	3.28	3.04	.110
851102	406.0	5.54	2.88	.110
851108	46.0	.36	.48	.010
851114	121.0	7.05	3.06	.120
851120		.96	.27	.040
851126		.71	1.56	.030

SUSPENDED PARTICULATE DATA

WARFIELD SUBSTATION

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
851202	8.0	.75	.45	.030
851208	3.0	.13	.13	.010
851214	358.0	3.76	2.93	.130
851220	10.0	.87	.58	.030
851226	9.0	.12	.12	.010

SUSPENDED PARTICULATE DATA

OASIS

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
761006	21.0	.15	.15	.030
761012	212.0	3.77	6.28	.190
761018	45.0	.35	.18	.050
761024	101.0	2.95	4.19	.080
761030	145.0	5.36	4.56	.140
761206	150.0	4.23	.15	.070
761212	120.0	7.61	4.43	.210
761218	82.0	2.13	1.64	.150
761224	102.0	4.87	3.06	.170
761230	114.0	.18	.18	.020
770105	160.0	7.13	5.58	.220
770111	118.0	3.46	2.05	.080
770117	250.0	8.69	5.47	.310
770123	51.0	1.78	1.10	.050
770129	160.0	5.44	3.17	.140
770204	130.0	5.22	4.92	.120
770210	225.0	4.48	8.48	.130
770216	130.0	5.46	7.37	.180
770222	79.0	8.40	7.20	.320
770228	23.0	.48	.36	.040
770306	36.0	1.88	1.59	.040
770312	39.0	.76	.45	.080
770318	33.0	.66	.79	.040
770324	33.0	1.35	.95	.040
770330	63.0	.55	.27	.040
770405	45.0	.41	.41	.040
770411	17.0	.13	.13	.040
770417	47.0	1.12	2.24	.040
770423	19.0	.15	.15	.040
770429	53.0	.45	.30	.050
770505	26.0	.69	.55	.040
770511	11.0	.42	.42	.040
770517	11.0	.86	.86	.040
770523	32.0	1.07	1.47	.040
770529	14.0	.74	.68	.040
770604	21.0	.71	.85	.040
770610	44.0	.50	.25	.040

SUSPENDED PARTICULATE DATA

OASIS

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
770616	59.0	.58	.58	.040
770622	42.0	.14	.14	.040
770628	21.0	.70	1.11	.010
770704	25.0	.57	.99	.010
770711	41.0	.56	3.20	.030
770716	37.0	.84	1.12	.040
770722	44.0	.85	4.65	.040
770728	13.0	.29	.29	.040
770803	11.0	.16	.16	.050
770809	19.0	.15	.30	.040
770816	38.0	.28	.28	.040
770821	32.0	.51	3.42	.050
770827	14.0	.28	1.70	.040
770902	22.0	1.27	.97	.050
770910	7.0	.07	.14	.040
770914	88.0	3.19	10.10	.170
770920	41.0	1.31	.58	.070
770926	92.0	3.18	2.73	.130
771003	23.0	.26	.51	.040
771008	71.0	4.95	5.94	.260
771014	12.0	.22	.30	.040
771020	17.0	.07	.07	.040
771026	74.0	4.80	8.22	.210
771101	43.0	6.08	1.82	.380
771107	24.0	1.04	.45	.070
771113	48.0	6.86	4.45	.230
771119	17.0	1.81	2.36	.070
771126	80.0	3.65	3.36	.130
771201	141.0	5.67	9.40	.280
771207	27.0	.84	.63	.060
771214	134.0	12.00	4.50	.270
771219	61.0	3.17	2.21	.090
771224	18.0	.85	1.27	.040
771231	42.0	2.55	2.28	.040
780106	130.0	8.54	14.42	.410
780112	34.0	.14	.14	.040
780118	36.0	.15	.15	.010
780124	193.0	15.40	32.20	.590

SUSPENDED PARTICULATE DATA

OASIS

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
780130	36.0	.14	.14	.010
780205	20.0	.63	.56	.030
780211	27.0	.27	.14	.010
780217	104.0	9.23	12.35	.270
780223	16.0	2.59	2.16	.090
780301	19.0	1.16	.65	.030
780307	113.0	5.58	2.79	.160
780314	86.0	3.39	4.77	.120
780319	111.0	2.25	4.35	.100
780325	92.0	7.31	2.23	.270
780331	34.0	.29	.14	.010
780406	30.0	.14	.14	.010
780412	32.0	.48	.64	.020
780418	22.0	.27	.27	.030
780424	5.0	.14	.14	.010
780430	37.0	.15	.46	.020
780506	44.0	1.53	2.64	.080
780512	31.0	.54	.81	.080
780518	.7	.18	.18	.020
780524		1.75	2.52	.150
780530	33.0	.16	.16	.030
780605	78.0	1.60	1.02	.010
780611	26.0	.75	.56	.070
780617	42.0	1.53	1.11	.060
780623	58.0	.14	.14	.140
780629	84.0	2.60	5.00	.090
780705	73.0	2.48	1.77	.110
780711	27.0	.57	.57	.030
780717	34.0	2.06	1.92	.070
780724	111.0	2.74	2.02	.070
780729	9.0	.59	1.04	.010
780804	15.0	.33	.17	.020
780810	78.0	1.02	1.31	.020
780817		.59	1.91	.010
780823	54.0	4.85	3.38	.160
780829	98.0	6.27	21.88	.320

SUSPENDED PARTICULATE DATA

OASIS

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
780903	50.0	1.46	.65	.100
780909	47.0	2.23	1.12	.130
780915	75.0	1.02	.85	.050
780921	50.0	3.22	4.83	.100
780927	44.0	1.45	1.98	.130
781004	20.0	1.54	1.68	.110
781010	51.0	2.82	2.69	.170
781015	44.0	.13	.13	.010
781021		.56	.71	.030
781027	82.0	3.30	5.70	.110
781102	122.0	9.40	18.70	.340
781108	18.0	1.11	1.25	.020
781114	215.0	13.90	10.30	.420
781120	10.0	.14	.14	.010
781125	88.0	1.11	1.58	.020
781202	104.0	5.22	3.48	.280
781208	122.0	4.40	1.99	.170
781214	65.0	4.92	4.76	.310
781220	150.0	3.82	2.39	.160
781226	231.0	6.64	5.48	.280
790103	44.0	.13	.13	.010
790108	7.0	.16	.16	.020
790115	22.0	.15	.15	.020
790120	248.0	12.09	11.30	.500
790126	126.0	6.14	4.65	.450
790201	153.0	5.17	3.65	.210
790207	67.0	4.40	3.40	.140
790214	14.0	.14	.14	.010
790221	38.0	1.94	1.64	.060
790225	170.0	11.90	6.20	.060
790303	198.0	10.50	4.77	.370
790309	102.0	.52	.39	.010
790315	65.0	2.13	2.79	.200
790321	30.0	.16	.16	.020
790402	123.0	6.55	3.59	.140
790408	72.0	.43	.57	.010
790420	37.0	.41	.41	.010
790426	83.0	.49	.33	.170

SUSPENDED PARTICULATE DATA

OASIS

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
790502	30.0	.46	.46	.030
790509	27.0	.16	.32	.010
790515	50.0	.25	.13	.010
790520	76.0	.27	.13	.010
790526	92.0	1.10	1.40	.050
790601	57.0	1.40	1.20	.050
790607	36.0	.14	.14	.010
790613	58.0	.50	.50	.170
790619	58.0	.79	.95	.210
790625	32.0	.16	.32	.020
790701	34.0	6.72	3.50	.190
790707	72.0	2.35	1.34	.100
790713	40.0	.71	.35	.050
790719	49.0	.37	.18	.020
790725	11.0	.15	.15	.010
790731	58.0	3.16	2.89	.070
790812	43.0	.13	.13	.030
790818	3.0	.47	.47	.020
790824	22.0	.60	.45	.030
790830	93.0	6.00	3.60	.310
790905	43.0	.52	.52	.030
790911	18.0	.15	.15	.010
790917	48.0	.30	.15	.020
790924	30.0	.30	.15	.020
790929	28.0	.83	1.49	.030
791005	32.0	3.19	3.92	.100
791011	67.0	1.21	1.51	.040
791017	12.0	1.03	3.99	.040
791024	95.0	7.22	3.02	.270
791030	87.0	6.16	8.01	.350
791105	12.0	.13	.13	.010
791110	226.0	6.00		.400
791116	177.0	14.28	6.12	.500
791122	55.0	2.00	3.46	.070
791128	28.0	1.71	1.40	.030
791204	46.0	2.25	1.77	.080

SUSPENDED PARTICULATE DATA

OASIS

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
791212	350.0	9.69	35.76	.250
791217	16.0	4.35	2.18	.060
791222	50.0	2.08	1.21	.050
791228	44.0	4.03	5.04	.130
800103	2.3	.61	.46	.030
800109	27.0	.38	.25	.010
800115	95.0	4.68	3.84	.130
800121	24.0	1.98	1.49	.090
800127	71.0	7.26	3.39	.190
800202	64.0	11.79	3.54	.280
800208	19.0	.80	.64	.020
800214	22.0	.15	.15	.020
800220	81.0	3.77	15.58	.050
800226	32.0	2.48	.31	.030
800303	38.0	2.02	1.09	.060
800309	85.0	10.06	4.00	.270
800315	43.0	2.37	1.42	.050
800321	81.0	9.09	6.16	.140
800327	63.0	4.79	2.97	.080
800402	34.0	.31	.31	.020
800409	30.0	1.87	1.02	.030
800414	56.0	2.40	3.67	.060
800420	74.0	1.67	1.22	.050
800426	73.0	.16	.16	.010
800503	61.0	.33	.33	.030
800508	41.0	.18	.18	.020
800514	141.0	2.21	7.07	.160
800520	337.0	.16	.66	.020
800526	71.0	2.42	2.42	.100
800601	64.0	1.04	.69	.020
800607	46.0	.15	.15	.020
800613	59.0	1.51	1.18	.030
800619	49.0	1.08	.90	.040
800625	43.0	1.89	.94	.010
800812	34.0	.15	.15	.010
800818	57.0	1.62	1.03	.070
800824	15.0	.15	.15	.020
800830	76.0	2.74	1.82	.120

SUSPENDED PARTICULATE DATA

OASIS

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
800905	52.0	1.52	1.79	.100
800911	74.0	3.13	3.50	.180
800919	65.0	2.88	1.88	.130
800929	88.0	2.39	1.59	.120
801004	151.0	3.24	1.94	.150
801011	62.0	.92	.46	.050
801017	123.0	7.58	7.27	.280
801023	16.0	.12	.12	.010
801029	79.0	6.55	6.55	.250
801104	64.0	.80	.32	.030
801110	19.0	1.08	.62	.030
801116	273.0	14.10	53.10	.570
801122	8.2	.61	.61	.020
801128	173.0	2.46	14.01	.290
801204	3.0	.23	.23	.020
801210	145.0	5.16	3.44	.220
801216	216.0	4.80	5.60	.370
801222	114.0	4.99	7.57	.210
801228	178.0	.45	4.98	.180
810103	24.0	.45	.15	.030
810109	116.0	4.95	4.65	.240
810116	34.0	.15	.15	.020
810121		.40	.40	.120
810127	60.0	.29	.29	.040
810202		.60	.60	.020
810208	83.0	6.27	2.58	.460
810214	101.0	5.90	6.72	.440
810220	29.0	2.14	1.74	.130
810226	47.0	.17	.17	.020
810304	29.0	.16	.31	.020
810310	51.0	.16	.16	.020
810316	42.0	3.32	7.85	.300
810321	66.0	1.39	1.55	.060
810328	42.0	2.45	1.22	.120
810403	33.0	2.00	1.09	.090
810410	58.0	3.61	2.04	.200

SUSPENDED PARTICULATE DATA

OASIS

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
810416	38.0	1.09	.42	.020
810421	60.0	1.00	1.00	.050
810427	80.0	7.34	3.21	.230
810503	29.0	.50	.76	.030
810509	68.0	.90	.67	.020
810515	15.0	.28	.28	.030
810521	66.0	1.27	1.52	.050
810527	57.0	.31	.31	.020
810602	74.0	.77	7.61	.050
810608	104.0	9.40	5.84	.330
810614	41.0	1.72	1.18	.070
810620	51.0	1.68	.95	.070
810626	52.0	.92	.79	.010
810702	40.0	1.65	1.32	.080
810714	37.0	.86	2.34	.060
810720	45.0	1.04	.52	.050
810726	13.0	2.08	1.04	.080
810801	14.0	.14	.14	.010
810807	25.0	.12	.12	.010
810813	37.0	.12	.12	.010
810819	48.0	.33	3.38	.090
810825	47.0	1.88	.94	.030
810901	64.0	1.80	3.84	.100
810906	12.0	.11	.11	.010
810912	41.0	.61	.48	.040
810918	105.0	2.18	2.00	.130
810924	15.0	.22	.22	.020
810930	22.0	.23	.11	.010
811006	27.0	.13	.13	.010
811018		8.17	5.01	.390
811024	121.0	7.20	2.64	.340
811030	62.0	2.61	1.63	.050
811105	15.0	.10	.10	.010
811111	70.0	3.25	3.71	.170
811117	41.0	2.04	2.28	.060
811123	51.0	2.95	2.95	.160
811129	34.0	3.67	2.59	.160

SUSPENDED PARTICULATE DATA

OASIS

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
811205	82.0	5.20	2.98	.140
811211	39.0	3.29	2.81	.100
811217	11.0	.12	.12	.010
811223	85.0	8.00	3.81	.200
811229	103.0	.74	7.42	.170
820104	31.0	1.15	2.56	.100
820111	156.0	14.60	14.60	.320
820116	145.0	5.82	2.96	.300
820123	104.0	3.01	16.77	.190
820128	101.0	8.30	3.47	.210
820203	42.0	1.53	1.39	.060
820209	143.0	8.50	5.24	.210
820215	91.0	6.63	3.38	.300
820221	61.0	2.13	2.58	.100
820227	52.0	1.28	.85	.070
820305	102.0	3.28	3.67	.140
820311	48.0	2.80	2.38	.110
820317	24.0	.12	.24	.010
820323	45.0	1.26	1.39	.040
820329	47.0	1.43	1.43	.040
820404	52.0	.41	.21	.010
820410	104.0	2.21	1.85	.060
820416	36.0	.69	.69	.060
820424	130.0	1.89	2.16	.190
820428	46.0	1.64	1.99	.150
820504	94.0	2.98	2.73	.190
820510	57.0	1.45	1.57	.100
820516	40.0	.12	.12	.010
820522	56.0	1.13	1.76	.100
820528	31.0	.87	.62	.040
820604	64.0	1.46	1.73	.090
820609	56.0	.56	.56	.020
820616	46.0	.31	.31	.020
820621	106.0	4.29	3.80	.130
820627	38.0	.51	1.28	.010
820808	46.0	1.69	.92	.030
820814	31.0	.66	.66	.020
820820	16.0	.15	.15	.020

SUSPENDED PARTICULATE DATA

OASIS

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
820827	68.0	1.84	2.30	.070
820901	22.0	.66	.88	.020
820907	38.0	2.09	.70	.120
820913	26.0	.22	.22	.020
820919	19.0	.20	.40	.020
820925	12.0	.54	2.43	.080
821001	75.0	4.13	3.50	.200
821007	25.0	.32	.65	.030
821013	56.0	1.98	3.63	.090
821019	87.0	2.93	5.99	.110
821025	10.0	.41	.54	.030
821031	92.0	2.83	2.36	.150
821106	23.0	1.39	1.89	.050
821112	214.0	3.97	5.08	.200
821118	101.0	3.90	6.00	.320
821124	119.0	6.08	6.40	.200
821130	32.0	2.40	.56	.170
821206	44.0	.93	1.20	.040
821212	132.0	6.60	4.44	.280
821218	116.0	4.74	4.10	.240
821224	214.0	7.14	6.55	.200
821230	187.0	3.60	7.50	.120
830105	181.0	4.36	11.88	.220
830112	360.0	16.10	7.25	.530
830118	112.0	5.97	3.62	.160
830124	59.0	5.67	4.73	.170
830130	34.0	.12	.12	.010
830204	25.0	.12	.12	.010
830210	101.0	6.11	3.77	.340
830216	94.0	5.11	5.11	.240
830222	92.0	2.91	1.90	.130
830228	71.0	2.18	4.36	.120
830306	44.0	1.95	1.95	
830312	19.0	.58	.58	
830318	38.0	.48	.85	
830324	34.0	.33	.33	
830330	18.0	.95	1.07	

SUSPENDED PARTICULATE DATA

OASIS

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
830405	55.0	1.95	3.54	.090
830411	24.0	.25	.50	.030
830417	61.0	.37	.49	.010
830423	32.0	.13	.25	.010
830429	32.0	.29	.44	.020
830505	42.0	1.07	1.47	.080
830511	42.0	.18	.18	.020
830517	40.0	2.99	2.46	.090
830523	44.0	.23	.35	.010
830529	46.0	.15	.15	.060
830604	51.0	1.30	1.62	.030
830610	86.0	1.73	4.54	.130
830614	48.0	.22	.44	.020
830620	41.0	.20	.41	.020
830622	69.0	1.29	3.86	.060
830628	52.0	1.67	3.81	.080
830704	30.0	.43	.99	.030
830710	35.0	1.98	2.73	.090
830716	25.0	.27	.68	.040
830723	74.0	1.79	2.43	.100
830728	55.0	1.70	4.65	.180
830803	49.0	.14	.43	.010
830810	31.0	.38	.76	.010
830815	35.0	.38	.89	.010
830821	22.0	.25	.38	.010
830827	9.0	.14	.27	.010
830902	51.0	4.40	4.97	.170
830908	36.0	.80	1.88	.040
830914	19.0	.13	.13	.010
830920	35.0	1.55	2.38	.080
830926	87.0	6.45	12.40	.420
831002	43.0	3.93	2.46	.070
831008	76.0	4.93	4.52	.100
831014	96.0	3.56	3.96	.160
831020	58.0	2.38	3.76	.080
831026	111.0	6.27	5.47	.310
831101	26.0	1.64	1.39	.140
831107	58.0	3.78	3.42	.170

SUSPENDED PARTICULATE DATA

OASIS

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
831119	23.0	1.51	1.30	.070
831125	42.0	1.73	2.53	.070
831201	52.0	1.33	5.81	.050
831213	113.0	4.39	4.67	.400
831219	12.0	.62	1.09	.030
831225	22.0	.42	.71	.010
831231	117.0	5.41	7.48	.200
840105	249.0	14.82	11.86	.960
840112	34.0	.89	1.78	.040
840118	56.0	1.27	1.27	.040
840124	91.0	4.63	4.38	.190
840130	32.0	.15	.15	.010
840205	67.0	.98	1.71	.040
840211	91.0	6.45	4.64	.270
840217	64.0	3.70	4.05	.140
840223	36.0	1.15	2.16	.040
840229	71.0	5.22	5.08	.210
840312	98.0	3.61	1.88	.160
840318	59.0	4.03	3.92	.160
840324	24.0	2.06	2.33	.060
840330	50.0	.71	.57	.030
840405	150.0	1.62	3.70	.050
840411	51.0	3.08	3.48	.100
840417	39.0	.29	.58	.020
840423		.42	.70	.010
840429	63.0	1.16	.77	.040
840505	57.0	1.30	.86	.060
840511	69.0	1.19	.90	.050
840517	63.0	2.02	8.76	.160
840523	99.0	1.67	1.84	.080
840529	63.0	.77	.97	.060
840604	80.0	5.71	7.51	.420
840610	39.0	.13	.13	.010
840616	78.0	2.72	3.40	.090
840622	38.0	1.03	1.94	.040
840628	41.0	.40	.79	.030

SUSPENDED PARTICULATE DATA

OASIS

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
840705	23.0	.75	1.50	.020
840711	42.0	1.08	1.39	.050
840717	39.0	1.81	1.42	.050
840723	33.0	.15	.15	.020
840729	63.0	1.16	1.45	.040
840803	29.0	.20	.20	.020
840809	38.0	.82	1.37	.030
840815	24.0	.46	.31	.020
840821	26.0	.17	.17	.020
840827	32.0	1.35	4.05	.080
840902	21.0	.44	.44	.020
840908	36.0	.58	.44	.030
840914	16.0	.15	.15	.020
840920	26.0	1.39	1.57	.070
840926	17.0	.14	.14	.010
841002	41.0	.29	.29	.010
841008	60.0	2.72	4.22	.150
841014	75.0	1.82	1.40	.070
841020	65.0	1.31	1.79	.060
841026	88.0	3.04	4.78	.130
841101	31.0	.11	.11	.010
841107	68.0	3.95	3.81	.110
841113	48.0	3.78	2.90	.160
841119	53.0	4.08	2.13	.160
841125	56.0	4.42	2.29	.120
841201	89.0	2.43	2.24	.060
841207	120.0	6.59	4.35	.170
841213	64.0	5.19	4.82	.210
841219	71.0	3.82	3.38	.160
841225	93.0	6.84	2.36	.210
841231	43.0	1.94	1.42	.070
850106	14.0	.14	.14	.010
850112	67.0	2.23	2.07	.160
850118	167.0	4.76	3.26	.260
850125	31.0	.47	.35	.010
850130	32.0	.26	.52	.010
850205	98.0	5.67	7.61	.160
850211	133.0	3.41	3.60	.210

SUSPENDED PARTICULATE DATA

OASIS

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
850217	91.0	5.67	4.03	.180
850223	102.0	6.08	4.33	.260
850301	25.0	.18	.18	.020
850307	60.0	2.93	5.05	.160
850314	93.0	3.43	6.56	.220
850319	124.0	5.59	6.68	.240
850325	52.0	.78	.91	.040
850331	87.0	5.47	5.33	.250
850406	51.0	.13	.25	.010
850412	35.0	2.46	2.89	.160
850418	21.0	.65	.78	.040
850424	9.0	.31	.31	.020
850430	38.0	.61	.76	.060
850506		.88	.70	.040
850512	34.0	2.34	2.05	.180
850518	29.0	.55	.55	.030
850524	39.0	.29	.02	.020
850530	83.0	2.09	2.87	.100
850605	8.0	.15	.58	.010
850611	66.0	1.37	1.08	.070
850617	15.0	.15	.15	.020
850623	21.0	.29	1.03	.020
850629	32.0	.47	1.11	.020
850705	52.0	.64	1.13	.030
850711	48.0	.91	.73	.040
850717	27.0	.16	.32	.020
850723	43.0	.13	.40	.010
850729	58.0	.13	.13	.010
850804	40.0	1.13	1.62	.050
850810	41.0	.59	.98	.060
850816	44.0	.60	.60	.020
850822	29.0	.46	.31	.020
850828	99.0	1.52	1.52	.070
850903	44.0	.88	.88	.030
850910	27.0	.18	.18	.020
850915	69.0	4.03	2.60	.170
850921		2.10	1.65	.090
850927	21.0	.67	.54	.030

SUSPENDED PARTICULATE DATA

OASIS

Date	Total Suspended Particulate ug/m3	Lead ug/m3	Zinc ug/m3	Cadmium ug/m3
851003	31.0	.16	.16	.020
851009	22.0	1.82	1.82	.130
851015	69.0	6.30	1.96	.320
851021	31.0	2.79	1.57	.100
851027	68.0	2.88	3.93	.140
851102	111.0	3.87	4.01	.080
851108	27.0	.85	.85	.040
851114	97.0	6.31	3.73	.100
851120		1.02	.73	.040
851126		.93	2.00	.040
851202	83.0	2.41	1.85	.110
851208	41.0	.75	1.21	.030
851214	194.0	7.10	8.88	.280
851220	16.0	.90	.75	.030
851226	16.0	.13	.13	.010

IMPINGER TRAIN DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
750903	.49	1.48
750910	.55	.11
750917	.51	.70
750924	.63	.94
751001	.84	.63
751008	.64	.38
751015	.53	.68
751022	.57	.51
751029	.49	.15
751105	.23	.23
751112	.50	.76
751119	.39	.41
751126	.47	.37
751203	.23	.27
751210	.46	1.42
751217	.27	1.08
751224	.40	.11
751231	.26	.37
760107	.53	.42
760114	.33	.84
760121	.30	.02
760128	.94	.52
760204	.73	1.68
760211	.54	.81
760218	.49	.54
760225	.70	.26
760303	.73	.63
760310	.92	.46
760317	.67	.58
760324	.67	.45
760331	1.02	.76
760407	.85	.01
760414	.59	.23
760421	.76	.26
760428	1.66	.48
760505	1.84	.29

IMPINGER TRAIN DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
760512	2.68	.36
760519	1.02	.33
760526	1.44	.11
760602	.99	.11
760609	.12	1.18
760616	.19	.97
760623	2.40	.40
760630	1.49	1.49
760707	1.63	.12
760714	1.92	.38
760721	2.71	.38
760728	2.02	.40
760804	1.82	.33
760811	1.11	.33
760818	.70	.11
760825	.58	.46
760901	.54	.14
760908	.31	.53
760915	.86	.02
760922	.72	.48
760929	.52	.69
761006	.92	.32
761013	.39	.93
761020	.27	.21
761027	.34	.67
761201	.16	.19
761208	.20	.05
761215	.52	.41
761222	.13	.63
761229	.08	.45
770105	.28	.23
770112	.18	.59
770119	.25	1.46
770126	.39	.52
770202	.27	.43
770209	.97	.45

IMPINGER TRAIN DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
770216	.54	.58
770223	.42	.45
770302	.34	.38
770309	.41	.91
770316	.51	.71
770323	.44	.35
770330	.77	.10
770406	1.04	.09
770413	.69	.51
770420	.91	1.38
770427	1.14	.07
770504	.90	.20
770511	1.57	.02
770518	1.07	.01
770525	2.71	.92
770601	1.46	.61
770608	4.01	
770615	1.64	.32
770622	1.34	.96
770629	1.34	.96
770706	1.21	.72
770713	.86	.25
770720	2.09	.15
770727	1.78	.51
770809	4.05	.75
770814	1.00	2.06
770817	.37	.25
770824	.77	.10
770831	.63	.47
770907	.52	.35
770914	1.23	.16
770921	.91	.91
770928	.33	.66
771005	.63	.28
771012	.66	.33
771019	1.87	3.12

IMPINGER TRAIN DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
771026	.43	.43
771102	.31	.08
771109	.38	.38
771116	.33	.30
771123	.29	.29
771130	.32	.52
771207	.38	.38
771214	.22	.17
771221	.35	.17
771228	.32	.08
780104	.17	.30
780111	.51	.09
780118	.14	.11
780125	.32	.13
780201	.42	.59
780208	.28	1.06
780215	.40	.32
780222	.22	.11
780301	.29	.64
780308	.38	.10
780315	.35	.53
780322	.13	.21
780329	.11	.87
780405	.37	.47
780412	.23	.73
780419	.74	.12
780426	.73	.81
780503	.49	.02
780510	.26	.68
780517	.68	.05
780524	.83	.06
780531	1.36	.44
780607	2.10	.32
780614	1.05	.43
780621	1.36	.04
780628	1.37	.27

IMPINGER TRAIN DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
780705	.58	.56
780712	1.09	.08
780719	2.12	.43
780726	1.83	.65
780802	1.14	.63
780809	1.42	.18
780816	.22	.12
780823	.25	2.43
780829	.31	.28
780905	.14	.06
780913	.30	.36
780920	.23	.25
780927	.26	.78
781004	.01	.36
781011	.20	.12
781018	.15	.09
781025	.10	.17
781101	.11	.09
781108	.07	.88
781115	.03	.07
781122	.04	.10
781129	.06	.30
781206	.35	.40
781213	.34	.16
781220	.38	.13
781227	.18	.12
790103	.29	.29
790110	.15	.11
790117	.12	.67
790124	.14	
790113	.07	2.51
790207	.08	.47
790214	.20	.08
790221	.20	.23
790228	.15	.31

IMPINGER TRAIN DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
790307	.22	.20
790314	.30	.27
790321	.39	.10
790328	.13	.09
790404	.43	.11
790411	.27	.24
790418	.25	.09
790425	.90	.46
790502	.41	.07
790509	.85	.11
790516	1.35	.16
790523	.86	.37
790530	.85	.38
790606	1.47	.19
790613	1.53	.77
790620	1.26	1.01
790627	.32	.19
790704	1.12	.37
790711	.67	1.27
790718		.81
790725	.54	.20
790801	1.08	.51
790808	.93	.35
790815	.83	.49
790822	.37	.15
790829	.25	.25
790905	.65	.72
790912	.81	.50
790919	.68	.72
790926	.67	.39
791003	.30	.30
791010	.46	.72
791017	.31	.21
791024	.30	.24
791031	.30	.24
791107	.67	.93

IMPINGER TRAIN DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
791114	.08	.24
791121	.13	.19
791128	.17	.21
791205	.18	.16
791212	.07	.50
791219	.04	.14
791226	.07	.12
800102	.14	.23
800109	.15	.13
800116	.18	.14
800123	.35	.17
800130	.28	.13
800206	.06	.21
800213	.10	.28
800220	.23	.31
800227	.47	.64
800305	.30	.19
800312	.63	.26
800319	.23	.32
800326	.14	.17
800402	.51	.25
800416	1.36	.14
800423	.98	.20
800430	.60	.29
800507	.53	.10
800514	.56	.15
800521	.46	.24
800528	.16	.26
800604	.55	.37
800611	.31	.10
800618	.05	1.12
800625	.56	.22
800730	.57	.17
800806	.24	.14

IMPINGER TRAIN DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
800813	.32	.15
800820	.51	.16
800827	.23	.31
800903	.44	.11
800910	.25	.28
800917	.17	.21
800924	.26	.24
801001	.38	.72
801008	.17	.22
801015	.27	.21
801022	.20	.17
801029	.18	.15
801105	.04	.19
801112	.54	.21
801119	.06	.20
801126	.24	.22
801203	.06	.21
801210	.20	.17
801217	.02	.21
801224	.02	.17
801231	.28	.18
810107	.68	.36
810114		.20
810121	.99	.17
810128		.24
810204		.21
810211	.21	.19
810218	.02	.24
810225	.11	.27
810304	.05	.25
810311	.29	.28
810318	.06	.21
810325	.14	.23
810401	.15	.24
810408	.05	.18
810414	.36	.20

IMPINGER TRAIN DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
810422	.22	.24
810428	.28	.19
810506	.02	.19
810513	.37	.17
810520	.47	.17
810527	.46	.23
810603	.21	.21
810610	.18	.18
810617	.19	.19
810624	.48	.20
810701	.82	.21
810708	.17	.24
810715	.79	.23
810722	.61	.19
810729	.55	.17
810805	1.16	.17
810812	2.29	.26
810819	1.61	.45
810826	1.59	.24
810902	.30	.19
810909	.37	.22
810916	.32	.23
810923	.26	.15
810930	.17	.21
811007	.11	.14
811014	.15	.25
811021	.04	.22
811028	.10	.32
811104	.34	.22
811111	.18	.23
811118	.14	.23
811125	.23	.38
811202	.04	.20
811209	.32	.15
811209	.32	.15
811216	1.14	.18

IMPINGER TRAIN DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
811223	.42	.25
811230	.28	.22
820106	.40	.17
820113	.82	.17
820120	.51	.14
820127	.77	.13
820203	2.40	.44
820210	.32	.21
820217	.20	.23
820224	.24	.22
820303	.43	.25
820310	.33	.15
820317	.61	.20
820324	.57	.18
820331	.70	.17
820407	.66	.23
820414	.44	.16
820421	1.25	.23
820428	.25	.25
820505	.48	.18
820512	.89	.20
820519	.75	.21
820526	.51	.17
820602	.70	.21
820609	1.28	.20
820616	1.52	.23
820623	1.69	.22
820804	1.18	.20
820811	1.13	.23
820818	.80	.89
820825	1.08	.65
820901	1.84	.16
820908	.64	.19
820915	.76	.19
820922	1.10	.22
820929	.34	.16

IMPINGER TRAIN DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
821006	.30	.14
821013	.39	.23
821020	.28	.18
821027	.19	.37
821103	.13	.32
821110	.24	.10
821117	.10	.16
821124	.79	.48
821201	.33	.39
821208	.35	.22
821215	.31	.37
821222	.19	.31
821229	.11	
830105	.17	.08
830112	.40	.38
830119	.25	.12
830126	.09	.18
830202	.34	.31
830209	.39	.16
830216	.39	.38
830223	.24	.11
830302	.19	.15
830309	.27	.16
830316	.19	.16
830323	.31	.20
830330	.35	.54
830406	.53	.20
830413	.67	.25
830420	.34	.29
830427	.27	.16
830504	.22	.27
830511	.29	.19
830518	.54	.19
830525	1.18	.22

IMPINGER TRAIN DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
830601	.66	.15
830608	.96	.18
830615	.21	.18
830622	.35	.22
830629	.42	.10
830706	.40	.15
830713	.33	.22
830720	.32	.18
830727	.17	.22
830803	.34	.20
830810	.14	.23
830817	.23	.23
830824	.17	.17
830831	.14	.25
830907	.13	.16
830914	.50	.16
830921	.31	.22
830928	.57	.20
831004	.07	.22
831012	.02	.16
831019	.17	.19
831026	.09	.12
831102	.02	.21
831109	.01	.13
831116	.15	.16
831123	.02	.23
831130	.14	.23
831207	.28	.14
831214	.03	.15
831221	.30	.16
831228	.10	.15
840104	.24	.17
840111	.44	.18
840118	.78	.22
840125	.62	.17
840201	.19	.17

IMPINGER TRAIN DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
840208	1.10	.32
840215	.33	.21
840222	.82	.22
840229	.38	.15
840307	.37	.17
840314	.59	.15
840321	.43	.17
840328	.61	.14
840404	1.00	.16
840411	.42	.11
840418	.76	.17
840509	.16	.17
840516	.26	.15
840523	.16	.13
840530	.15	.12
840606	.30	.13
840613	.20	.18
840620	.18	.20
840627	.29	.18
840704	.27	.22
840711	.30	.21
840718	.39	.18
840725	.45	.15
840801	.30	.14
840808	.27	.18
840815	.06	.20
840822	.05	.16
840829	.02	.17
840905	.17	.16
840912	.07	.07
840919	.17	.17
840926	.17	.18
841003	.05	.16
841010	.02	.23
841017	.03	.17
841024	.26	.19

IMPINGER TRAIN DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
841031	.05	.27
841107	.05	.16
841114	.07	.14
841121	.09	.13
841128	.02	.20
841205	.02	.16
841212	.03	.17
841219	.14	.28
841226	.22	.17
850102	.57	.18
850109	.07	.09
850116	.44	.11
850123	.22	.18
850130	.33	.28
850206	.04	.17
820213	.07	.22
850220	.19	.17
850227	.33	.14
850306	.52	.14
850313	.33	.16
850320	.05	.26
850327	.06	.13
850403	.10	.16
850410	.43	.16
850417	.22	.11
850424	.15	.15
850501	.16	.10
850508	.08	.16
850515	.32	.15
850522	.17	.14
850529	.11	.15
850605	.14	.19
850612	.34	.15
850619	.11	.09
850626	.02	.17

IMPINGER TRAIN DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
850703	.39	.18
850710	.47	.18
850717	.83	.36
850724	1.34	.25
850731	.13	.10
850807	.27	.14
850814	.39	.10
850821	.36	.18
850828	.28	.26
850904	.08	.16
850911	.06	.13
850918	.06	.14
850925	.31	.18
851002	.19	.14
851009	.15	.10
851016	.09	.12
851023	.10	.14
851030	.04	.15
851106	.10	.14
851113	.28	.13
851120	.07	.14
851127	.14	.13
851204	.26	.12
851211	.92	.16
851218	.01	.11
851225	.01	.14

IMPINGER TRAIN DATA

WARFIELD SUBSTATION

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
750903	.53	.09
750910	.14	.14
750917	.17	.49
750924	.70	.23
751001	.34	.25
751008	.31	.31
751015	.25	.54
751022	.26	.46
751029	.53	.42
751105	.23	.56
751112	.28	1.06
751119	.89	.45
751126	.55	.44
751203	.18	1.67
751210	.67	1.28
751217	.25	.94
751224	.44	.93
751231	.80	.44
760107	.47	.28
760114	1.04	.52
760121	.61	.36
760128	1.14	.24
760204	.98	.67
760211	1.06	1.01
760218	.99	1.42
760225	.56	.44
760303	3.80	.10
760310	2.86	.44
760317	.97	.19
760324	.89	.39
760331	.88	.39
760407	.63	.25
760414	.40	.72
760421		.22
760428	.84	.50
760505	1.46	.27

IMPINGER TRAIN DATA

WARFIELD SUBSTATION

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
760512	1.58	.49
760519	.54	.54
760526	.46	.14
760602	.49	.12
760609	.17	.42
760616	.15	.18
760623	.65	.39
760630	.25	.06
760707	.66	.19
760714	.60	.42
760721	1.13	.10
760728	.66	.10
760804	.34	.13
760811	.29	.19
760818	.38	.26
760825	.12	.59
760901	.40	.11
760908	.34	.22
760915	.33	.07
760922	.52	.37
760929	.71	.57
761006	.57	.41
761013	.52	.60
761020	.58	.19
761027	.50	.47
761201	.05	.28
761208	.92	.15
761215	1.18	.68
761222	.17	.39
761229	.12	.23
770105	.56	.67
770112	.71	.53
770119	.51	.20
770126	1.36	.90
770202	1.07	.39
770209	1.59	.81

IMPINGER TRAIN DATA

WARFIELD SUBSTATION

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
770216	1.04	.48
770223	1.29	.43
770302	2.26	.45
770309	1.00	1.69
770316	.77	.61
770323	.62	.86
770330	1.14	.13
770406	.62	.06
770413	.62	.52
770420	.46	.02
770427	.46	.46
770504	.44	.06
770511	.60	.24
770518	.72	.22
770525	.92	.49
770601	.46	.27
770608	.30	.32
770615	.68	.34
770622	.66	.04
770629	.38	.36
770706	.52	.59
770713	.18	.32
770720	.28	.31
770727	.63	
770809	.42	.11
770814	.35	.74
770817	.73	.07
770824	.31	.08
770831	.20	.16
770907	.57	.15
770914	.65	.26
770921	.63	.75
770928	.58	.19
771005	.83	.11
771012	.50	.13
771019	1.01	.10

IMPINGER TRAIN DATA

WARFIELD SUBSTATION

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
771026	.32	.36
771102	.45	.07
771109	.32	.16
771116	.67	.08
771123	.92	.44
771130	.89	.48
771207	.67	.11
771214	.60	.08
771221	.48	.25
771228	.21	.10
780104	1.03	.14
780111	.16	.08
780118	.54	.51
780125	.45	.36
780201	1.40	.08
780208	.60	1.12
780215	.87	.55
780222	.55	.09
780301	.45	.60
780308	1.22	.74
780315	.78	1.04
780322	.47	.34
780329	.37	.27
780405	.44	.56
780412	.35	.94
780419	.32	.34
780426	.41	.31
780503	.15	.02
780510	.58	.89
780517	.30	.08
780524	.27	.06
780531	.33	.11
780607	.39	.26
780614	.60	.18
780621	.66	.10
780628	.41	.15

IMPINGER TRAIN DATA

WARFIELD SUBSTATION

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
780705	.85	.44
780712	.42	.45
780719	.62	.59
780726	.57	.10
780802	.32	.31
780809	.32	.24
780816	.13	.07
780823	.10	.38
780829	.13	.25
780905	.20	.16
780913	.26	.25
780920	.38	.15
780927	.24	.43
781004	.32	.29
781011	.20	.15
781018	.41	.08
781025	.42	.05
781101	.49	.25
781108	.37	.25
781115	.16	.19
781122	.35	.26
781129	.16	.16
781206	.65	.65
781213	.59	.45
781220	.41	.45
781227	.51	.05
790103	.16	.08
790110	.41	.69
790117	.65	.23
790124	.51	.34
790131	.55	.63
790207	.40	.11
790214	.47	.72
790221	.51	.36
790228	.45	.42

IMPINGER TRAIN DATA

WARFIELD SUBSTATION

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
790307	.78	.21
790314	.41	.05
790321	.52	.06
790328	.33	.10
790404	.65	.23
790411	.41	.22
790418	.60	.17
790425	.91	.08
790502	.53	.16
790509	.68	.30
790516	1.00	.32
790523	.47	.26
790530	.70	.24
790606	.78	.20
790613	.74	.31
790620	.85	.29
790627	.46	.29
790704	.48	.69
790711	.54	.58
790718	.77	.43
790725	.74	.31
790801	.89	.22
790807	.53	.12
790815	.55	.24
790822	.53	.21
790829	.39	.16
790905	.37	.17
790912	.42	.14
790919	.60	.39
790926	.51	.39
791003	.70	.11
791010	.94	.40
791017	.38	.54
791024	.25	.33
791031	.36	.22
791107	.99	.23

IMPINGER TRAIN DATA

WARFIELD SUBSTATION

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
791114	.32	.37
791121	.30	.47
791128	.46	.58
791205	.21	.14
791212	.10	.19
791219	.40	.12
791226	.34	.45
800102	.20	1.12
800109	.32	1.01
800116	.20	.31
800123	.25	.19
800130	.22	.65
800206	.27	.23
800213	.25	.49
800220	.68	.54
800227	.68	.23
800305	.64	.33
800312	.65	.32
800319	.34	.48
800326	.17	.25
800402	.35	.37
800409	.32	.19
800416	2.76	5.03
800423	1.06	.20
800430	.48	.18
800507	.63	.18
800514	.46	.18
800521	.13	.19
800528	.04	.21
800604	.25	.22
800611	.68	.15
800618	.75	.23
800625	1.47	.46
800730	.43	.17

IMPINGER TRAIN DATA

WARFIELD SUBSTATION

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
800806	.32	.18
800813	.21	.38
800820	.54	.21
800827	.22	1.27
800903	.34	.21
800910	.29	.19
800917	.28	.26
800924	.30	.25
801001	.47	.18
801008	.33	.21
801015	.33	.18
801022	.29	.17
801029	.27	.15
801105	.22	.20
801112	.63	1.71
801119	.30	.18
801126	.25	.19
801203	.18	.18
801210	.44	.23
801217	.01	.18
801224	.02	.23
801231	1.03	.25
810107	1.13	.34
810114	1.81	.21
810121	1.58	.19
810128		.19
810204		.18
810211	.24	.17
810218	.16	.20
810226	.08	.21
810304	.23	.19
810311	.27	.22
810318	.21	.17
810325	.45	.22
810401	.27	.22
810408	.17	.17

IMPINGER TRAIN DATA

WARFIELD SUBSTATION

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
810414	.58	.23
810422	.37	.18
810428	.15	.19
810506	.17	.21
810513	.43	.16
810520	.40	.17
810527	.18	.18
810603	.08	.21
810610	.05	.16
810617	.08	.21
810624	.41	.17
810701	.39	.23
810708	.19	.25
810715	.22	.22
810722	.43	.17
810729	.42	.17
810805	.48	.20
810812	.58	.22
810819	.28	.21
810826	.26	.22
810902	.16	.16
810916	.49	.22
810923	.24	.15
810930	.52	.25
811007	.10	.17
811014	.52	.24
811021	.21	.18
811028	.22	.19
811104	.41	.16
811111	.38	.18
811118	.38	.16
811125	.30	.21
811202	.45	.25
811209	.69	.22
811216	1.15	.19
811223	.63	.22

IMPINGER TRAIN DATA

WARFIELD SUBSTATION

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
811230	.87	.22
820106	.54	.19
820113	1.26	.27
820120	.57	.18
820127	1.50	.19
820203	1.96	.27
820210	.83	.32
820217	1.79	.21
820224	.02	.24
820303	1.18	.50
820310	.10	.15
820317	.88	.20
820324	.72	.19
820331	1.00	.21
820407	.36	.17
820414	.40	.17
820421	.75	.19
820428	.02	.03
820505	.43	.23
820512	.55	.17
820519	.67	.17
820526	.10	.17
820602	.58	.25
820609	.71	.21
820616	1.17	.28
820623	.64	.24
820804	.91	.25
820811	.29	.19
820818	1.28	.16
820825	.95	.31
820901	2.31	.22
850908	.35	.35
820915	.61	.18
820922	.40	.22
820929	.60	.18

IMPINGER TRAIN DATA

WARFIELD SUBSTATION

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
821006	.43	.39
821013	.35	.22
821020	.47	.18
821027	.25	.36
821103	.32	.38
821110	.87	.12
821117	.21	.35
821124	1.34	.41
821201	.29	.20
821208	.13	.45
821215	.25	.36
821222	.55	.20
821229	.66	.26
830105	.46	.18
830112	1.18	.30
830119	1.04	.19
830126	.21	.23
830202	1.06	.44
830209	1.28	.51
830216	.35	.64
830223	.32	.17
830302	.35	.18
830309	.29	.18
830316	.58	.33
830323	.39	.20
830330	.44	.40
830406	.42	.22
830413	.68	.27
830420	.23	.17
830427	.11	.19
830504	.21	.16
830511	.08	.17
830518	.43	.20
830525	.83	.21
830601	.35	.14
830608	.89	.15

IMPINGER TRAIN DATA

WARFIELD SUBSTATION

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
830615	.43	.18
830622	.68	.17
830629	.32	.19
830706	.22	.10
830713	.26	.17
830720	.19	.19
830727	.12	.20
830803	.22	.13
830810	.16	.20
830817	.01	.11
830824	.15	.15
830831	.10	.14
830907	.16	.26
830914	.61	.19
830921	.29	.15
830928	.30	.23
831004	.36	.21
831012	.40	.11
831019	.13	.18
831026	.14	.12
831102	.14	.20
831109	.03	.27
831116	.02	.21
831123	.65	.27
831130	1.06	.20
831207	1.84	.22
831214	.43	.18
831221	.10	.13
831228	.13	.22
840104	.39	.14
840111	.36	.15
840118		.48
840125	.68	.18
840201	.25	.18
840208	.35	.17
840215	.35	.12

IMPINGER TRAIN DATA

WARFIELD SUBSTATION

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
840222	.74	.15
840229	1.40	.18
840307	.80	.14
840314	1.37	.18
840321	.66	.18
840328	.81	.16
840404	.56	.15
840411	.44	.14
840418	.75	.16
840425	.39	.14
840502	1.11	.15
840509	.12	.17
840516	.16	.13
840523	.10	.14
840530	.06	.15
840606	.82	.91
840613	.18	.18
840620	.06	.15
840627	.40	.19
840704	.18	.30
840711	.25	.23
840718	.11	.14
840725	.18	.20
840801	.16	.16
840808	.75	.21
840815	.25	.18
840822	.16	.20
840829	.18	.25
840905	.31	.22
840912	.13	.11
840919	.16	.14
840926	.17	.17
841003	.41	.20
841010	.25	.14
841017	.41	.19
841024	.43	.22

IMPINGER TRAIN DATA

WARFIELD SUBSTATION

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
841031	.18	.22
841107	.25	.18
841114	.16	.16
841121	.09	.18
841128	.04	.19
841205	.11	.16
841212	.11	.15
841219	1.02	.20
841226	1.16	.20
850102	.79	.16
850109	.29	.08
850116	.27	.16
850123	.20	.17
850130	.17	.14
850206	.02	.21
850213	.52	.29
850220	.54	.19
850227	.33	.15
850306	.76	.11
850313	1.32	.23
850320	.36	.16
850327	.22	.16
850403	.44	.11
850410	.32	.16
850417	.25	.14
850424	.32	.16
850501	.37	.08
850508	.25	.16
850515	.40	.13
850522	.43	.11
850529	.29	.13
850605	.22	.18
850612	.35	.27
850619	.44	.08
850626	.48	.17

IMPINGER TRAIN DATA

WARFIELD SUBSTATION

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
850703	.57	.09
850710	.38	.12
850717	.71	.15
850724	.51	.15
850731	.34	.13
850807	.39	.14
850814	.36	.06
850821	.47	.11
850828	.36	.12
850904	.19	.15
850911	.04	.18
850918	.29	.15
850925	.28	.16
851002	.31	.13
851009	.28	.11
851016	.30	.14
851023	.22	.17
851030	.31	.16
851106	.17	.15
851113	.28	.14
851120	.07	.14
851127	.11	.15
851204	.27	.14
851211	.16	.20
851218	.14	.13
851225	.24	.13

IMPINGER TRAIN DATA

OASIS

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
760929	.77	.87
761006	.59	.43
761013	.66	1.15
761020	1.43	.57
761027	1.17	1.09
761201	1.13	1.08
761208	3.02	1.15
761215	2.90	1.32
761222	2.16	1.62
761229	.18	1.33
770105	3.07	1.84
770112	2.69	1.17
770119	1.65	1.14
770126	3.27	1.74
770202	2.93	1.44
770209	1.93	1.01
770216	2.52	.97
770223	2.31	.92
770302	2.18	.76
770309	6.51	.58
770316	2.20	.48
770323	1.31	3.25
770330	1.48	.19
770406	.61	.24
770413	1.00	.74
770420	.55	.11
770427	.45	.39
770504	.65	.26
770511	1.19	1.76
770518	.78	.01
770525	1.24	.46
770601	.98	.10
770608	.43	.40
770615	.47	.09
770622	.58	.19
770629	.46	.43

IMPINGER TRAIN DATA

OASIS

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
770706	.40	1.11
770713	.52	.21
770720	.57	.27
770727	.45	
770809		.09
770814	.19	.62
770817	.16	.03
770824	.13	.07
770831	.48	.19
770907	.67	.72
770914	1.01	.10
770921	.57	1.06
770928	.62	.28
771005	1.07	.09
771012	.69	.17
771019	1.08	.70
771026	.72	1.01
771102	.67	.08
771109	1.00	1.03
771116	.69	1.48
771123	1.96	.84
771130	1.40	.86
771207	1.05	.21
771214	1.13	.94
771221	.50	.33
771228	.53	.27
780104	.80	.36
780111	.33	.08
780118	.60	.63
780125	1.01	1.08
780201	1.50	.87
780208	1.55	.34
780215	2.23	1.17
780222	.56	.45

IMPINGER TRAIN DATA

OASIS

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
780301	1.21	.69
780308	2.35	1.37
780315	1.18	.96
780322	.31	.45
780329	.98	.30
780405	.91	.77
780412	.29	.14
780419	.68	.45
780426	.82	.36
780503	.26	.14
780510	.30	.69
780517	.55	.09
780524	.58	.42
780531	.69	.06
780607	.79	.54
780614	1.23	.27
780621	.91	
780628	.42	.73
780705	.63	.06
780712	.61	.44
780719	.68	.61
780726	.54	.56
780802	.13	.61
780809	.40	.64
780816	.09	.06
780823	.66	.94
780829	.57	.63
780905	.51	.84
780913	.38	.43
780920	.41	.24
780927	.26	.64
781004	.17	1.56
781011	.26	.16
781018	.30	.20
781025	.37	.23
781101	.47	.29

IMPINGER TRAIN DATA

OASIS

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
781108	.32	.33
781115	.15	.24
781122	.39	.39
781129	.35	.07
781206	.83	.83
781213	.65	.07
781220	.71	.44
781227	.62	.20
790103	.39	.08
790110	.46	.09
790117	.76	.36
790124	.58	.27
790131	.77	
790207	.96	.27
790214	.77	.21
790221	.76	.10
790228	.85	.13
790307	1.02	.26
790314	.66	.07
790321	.52	.22
790328	.41	.14
790404	.58	.21
790411	.54	.10
790418	.59	.10
790425	.99	.08
790502	.53	.18
790509	.72	.17
790516	.64	.27
790523	.42	.51
790530	.51	.45
790606	.72	.74
790613	.84	.75
790620	.62	.42
790627	.53	.33
790704	.38	.67
790711	.28	.28

IMPINGER TRAIN DATA

OASIS

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
790718	.45	.34
790725	.53	.51
790801	.70	.44
790808	.39	.15
790815	.54	.43
790822	.29	.34
790829	.35	.78
790905	.32	.28
790912	.22	.14
790919	.61	.32
790926	.29	.29
791003	.16	.39
791010	.47	.42
791017	.19	.35
791024	.17	.32
791031	.25	.33
791107	1.04	.71
791114	.13	.40
791121	.26	.35
791128	.35	.44
791205	.64	.38
791212	.44	.47
791219	.65	.15
791226	.40	.55
800102	.40	.55
800109	.39	.31
800116	.73	.19
800123	.45	.21
800130	.34	.15
800206	.21	.34
800213	.38	.47
800220	.70	.52
800227	.51	.70
800305	.74	.21
800312	1.15	.32
800319	.57	.42

IMPINGER TRAIN DATA

OASIS

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
800326	.22	.36
800402	.33	.38
800409	.43	.20
800416	.80	4.74
800423	1.32	.20
800430	.86	.18
800507	.37	.18
800514	.43	.13
800521	.29	.17
800528	.20	.20
800604	.33	.18
800618	.53	.19
800625	.33	.39
800730	.77	.17
800806	.15	.15
800813	.34	.16
800820	.34	.13
800827	.50	.57
800803	.33	.18
800913	.25	.54
800917	.30	.29
800924	.26	.22
801001	.74	.18
801008	.19	.19
801015	.19	.16
801022	.16	.22
801029	.37	.18
801105	.19	.10
801112	1.24	.23
801119	.54	.15
801126	.66	.19
801203	.23	.38
801210	.61	.61
801217	.01	.28

IMPINGER TRAIN DATA

OASIS

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
801224	.02	.33
801231	1.19	.33
810107	1.00	.17
810114	2.31	.16
810121	1.75	.21
810128		.19
810204		.19
810211	.57	
810218	.27	.17
810225	.22	.18
810304	.06	.18
810311	.23	.19
810318	.20	.16
810325	.38	.21
810401	.51	.47
810408	.22	.18
810414	.55	.20
810422	.38	.20
810428	.20	.20
810506	.20	.19
810513	.74	.21
810520	.62	.16
810527	.23	.21
810603	.10	.13
810610	.25	.38
810617	.17	.17
810624	.60	.30
810701	.93	.23
810708	.23	.18
810715	.45	.15
810722	.40	.16
810729	.28	.13
810805	.44	.18
810812	.40	.15
810819	.16	.19
810826	.17	.21

IMPINGER TRAIN DATA

OASIS

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
810902	.02	.16
810909	.33	.39
810916	.64	.19
810923	.42	.17
810930	.49	.41
811007	.11	.18
811014	.18	.15
811021	.30	.17
811028	.24	.34
811104	.37	.14
811111	.45	.35
811118	.36	.45
811125	.44	.44
811202	.45	.42
811209	.71	.22
811216	1.33	1.20
811223	1.17	.23
811230	.36	.21
820106	.68	.23
820113	.48	.17
820120	.72	.36
820127	.94	.60
820203	1.29	.44
820210	.90	.23
820217	1.15	.18
820224	3.14	.18
820303	1.05	.45
820310	.57	.14
820317	1.13	.38
820324	.62	.16
820331	1.11	.16
820407	.49	.18
820414	.33	.14
820421	.68	.18
820428	.48	.24

IMPINGER TRAIN DATA

OASIS

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
820505	.47	.18
820512	.96	.17
820519	.62	.15
820526	.84	.15
820602	.32	.18
820609	.17	.15
820616	1.02	.17
820623	.65	.19
820804	1.11	.22
820811	.50	.24
820818	.79	.58
820825	.25	.54
820901	2.56	.16
820908	1.27	.16
820915	.98	.39
820922	.52	.24
820929	1.48	.15
821006	.30	.19
821013	.24	.16
821020	.85	.17
821027	.60	.62
821103	.43	.20
821110	4.42	4.19
821117	.43	.20
821124	4.01	2.83
821201	1.05	.22
821208	.78	.49
821215	.15	.30
821222	.57	.24
821229	.52	
830105	.78	.16
830112	.89	.20
830119	.55	.13
830126	.24	.18
830202	.40	.18
830209	.34	.16

IMPINGER TRAIN DATA

OASIS

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
830216	.38	.15
830223	.24	.14
830302	.22	.10
830309	.03	.14
830316	.22	.12
830323	.33	.27
830330	.39	.16
830406	.28	.17
830413	.27	.20
830420	.23	.29
830427	.02	.16
830504	.14	.11
830511	.07	.17
830518	.20	.16
830525	.65	.18
830601	.01	.14
830608	.42	.44
830615	.26	.17
830622	.33	.15
830629	.15	.11
830706	.13	.09
830713	.42	.16
830720	.32	.14
830727	.30	.17
830803	.08	.16
830810	.08	.17
830817	.13	.12
830824	.02	.15
830831	.19	.11
830907	.22	.17
830914	.83	.16
830921	.30	.19
830928	.32	.20
831004	.16	.16
831012	.21	.12
831019	.18	.18

IMPINGER TRAIN DATA

OASIS

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
831026	.23	.11
831102	.35	.20
831109	.09	.15
831116	.07	.17
831123	.04	.21
831130	.60	.34
831207	1.20	.21
831214	.18	.15
831221	.28	.23
831228	.53	.25
840104	.59	.37
840111	.61	.19
840118	1.47	.30
840125	.83	.17
840201	.67	.02
840208	.67	.17
840215	.76	.19
840222	.79	.16
840229	.73	.15
840307	1.70	.20
840314	.54	.14
840321	.82	.15
840328	.85	.14
840404	.98	.20
840411	.67	.15
840418	.62	.11
840425	.31	.14
840502	1.12	.17
840509	.02	.18
840516	.10	.16
840523	.22	.13
840530	.26	.13
840606	.28	.39
840613	.65	.19
840620	.37	.15
840627	.55	.18

IMPINGER TRAIN DATA

OASIS

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
840704	.39	.18
840711	.37	.19
840718	.28	.16
840725	.38	.15
840801	.38	.17
840808	.45	.15
840815	.19	.19
840822	.66	.18
840829	.19	.17
840905	.28	.18
840912	.12	.10
840919	.12	.19
840926	.07	.17
841003	.20	.20
841010	.27	.14
841017	.28	.14
841024	.34	.20
841031	.20	.16
841107	.23	.17
841114	.27	.17
841121	.18	.14
841128	.06	.20
841205	.32	.29
841212	.29	.18
841219	.44	.22
841226	.25	.16
850102	1.86	.06
850109	2.25	.23
850116	1.47	.35
850123	.44	.14
850130	.04	.14
850206	.06	.21
850213	.64	.21
850220	.87	.16
850227	.33	.17

IMPINGER TRAIN DATA

OASIS

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
850306	.82	.12
850313	.72	.10
850320	.52	.19
850327	.07	.53
850403	.43	.12
850410	.61	.29
850417	.62	.21
850424	.35	.08
850501	.41	.04
850508	.24	.11
850515	.65	.13
850522	.43	.11
850529	.52	.15
850605	.61	.17
850612	.75	.22
850619	.09	.12
850626	.36	.15
850703	.53	.11
850710	.46	.13
850717	.67	.15
850724	1.07	.17
850731	.34	.10
850807	.30	.28
850814	.21	.15
850821	.42	.10
850828	.33	.13
850904	.27	.15
850911	.03	.16
850918	.36	.19
850925	.34	.26
851002	.34	.12
851009	.33	.12
851016	.28	.26
851023	.40	.14
851030	.50	.15
851106	.12	.16

IMPINGER TRAIN DATA

OASIS

Date	Total Fluoride ug/m3	Total Arsenic ug/m3
851113	.54	.14
851120	.19	.12
851127	.07	.13
851204	.45	.32
851211	.59	.33
851218	.51	.34
851225	.30	.16

BUTLER PARK MONTHLY DATA

Date	Particulate Total mg/dm2/d	Particulate Soluble mg/dm2/d	Particulate Insoluble mg/dm2/d	Lead Total mg/dm2/d	Lead Soluble mg/dm2/d	Lead Insoluble mg/dm2/d	Copper Total mg/dm2/d	Copper Soluble mg/dm2/d	Copper Insoluble mg/dm2/d	Zinc Total mg/dm2/d	Zinc Soluble mg/dm2/d	Zinc Insoluble mg/dm2/d	Cadmium Total mg/dm2/d	Cadmium Soluble mg/dm2/d	Cadmium Insoluble mg/dm2/d	Arsenic Total mg/dm2/d	Arsenic Soluble mg/dm2/d	Arsenic Insoluble mg/dm2/d	Sulphation Index mg/dm2/d	Fluoridation Index ug/cm2/d
7501	1.6146	1.4274	.1872	.0421	.0409	.0011	.0011	.0011	.0011	.1041	.1017	.0023	.0035	.0035					.55	
7502	2.4102	2.1762	.2340	.0725	.0655	.0070	.0023	.0023	.0011	.2024	.1907	.0117	.0046	.0046					.28	
7503	1.8018	1.3104	.4914	.0374	.0315	.0058	.0023	.0011	.0011	.1029	.0900	.0128	.0023	.0022	.0001				1.31	
7504	1.5327	.9828	.5499	.0397	.0339	.0058	.0011	.0011	.0011	.0666	.0585	.0081	.0014	.0012	.0001				1.27	
7505	2.2815	1.2168	1.0647	.0210	.0081	.0128	.0011	.0011	.0011	.1263	.1170	.0093	.0008	.0008	.0001				1.26	
7506	1.6146	1.1466	.4680		.0128			.0011			.0374			.0008					1.18	
7507	1.6731	1.0881	.5850	.0315	.0140	.0175	.0011	.0011	.0011	.0526	.0421	.0105	.0007	.0007	.0001				1.61	
7508	1.5795	1.1349	.4446	.0011	.0011	.0011	.0011	.0011	.0011	.0105	.0070	.0035	.0001	.0001	.0001				.25	
7509	3.4749	2.7495	.7254	.0339	.0035	.0304	.0011	.0011	.0011	.1275	.0912	.0362	.0012	.0010	.0002				1.40	
7510	1.6263	1.2519	.3744	.0608	.0549	.0058	.0035	.0011	.0023	.1310	.1193	.0117	.0021	.0019	.0001				1.17	
7511	.8892	.5850	.3042	.0315	.0257	.0058	.0023	.0011	.0011	.0538	.0479	.0058	.0011	.0010	.0001				1.14	
7512	.5967	.3393	.2574	.0257	.0234	.0023	.0011	.0011	.0011	.0351	.0315	.0035	.0011	.0011	.0001				1.35	
7601	.3042	.1287	.1755	.0315	.0280	.0035	.0035	.0023	.0011	.0702	.0655	.0046	.0022	.0021	.0001				.76	
7602	.5967	.0585	.5967	.0234	.0163	.0070	.0058	.0023	.0035	.0269	.0222	.0046	.0008	.0007	.0001				.26	
7603	.8073	.1521	.6552	.0421	.0362	.0058	.0023	.0011	.0011	.0772	.0678	.0093	.0021	.0019	.0001				.53	.133
7604	.6552	.1287	.5265	.0245	.0210	.0035	.0023	.0011	.0011	.0631	.0526	.0105	.0004	.0003	.0001				.94	.126
7605	1.1232	.4914	.6318	.0128	.0070	.0058	.0023	.0011	.0011	.0479	.0362	.0117	.0005	.0005	.0001				.74	.200
7606	1.3689	1.0764	.2925	.0152	.0128	.0023	.0011	.0011	.0011	.0479	.0421	.0058	.0008	.0008	.0001				1.53	.215
7607	1.4508	1.2051	.2457	.0070	.0035	.0035	.0011	.0011	.0011	.0280	.0245	.0035	.0004	.0004	.0001				1.48	.210
7608	.9126	.6435	.2691	.0117	.0093	.0023	.0011	.0011	.0011	.0620	.0514	.0105	.0003	.0003	.0001				.38	.030
7609	1.4040	.8658	.5382	.0198	.0175	.0023	.0023	.0011	.0011	.0468	.0409	.0058	.0007	.0007	.0001				1.19	.217
7610	.9126	.6786	.2340	.0175	.0140	.0035	.0011	.0011	.0011	.0432	.0386	.0046	.0005	.0005	.0001				1.34	.163
7611	.4680	.3627	.1053	.0081	.0070	.0011	.0011	.0011	.0011	.0105	.0093	.0011	.0003	.0003	.0001				1.04	.198
7612	.3978	.2808	.1170	.0093	.0093	.0011	.0011	.0011	.0011	.0257	.0257	.0011	.0008	.0008	.0001				.71	.129
7701	.1989	.1989	.0058	.0292	.0280	.0011	.0011	.0011	.0011	.0175	.0163	.0011	.0001	.0001	.0001				.62	.104
7702	.9945	.6435	.3510	.0257	.0222	.0035	.0023	.0011	.0011	.0514	.0456	.0058	.0010	.0008	.0002				2.19	.171
7703	.8658	.5499	.3159	.0245	.0210	.0035	.0011	.0011	.0011	.0549	.0491	.0058	.0009	.0009	.0001					.160
7704	1.6380	1.1466	.4914	.0187	.0128	.0058				.0315	.0222	.0093	.0003	.0003	.0001				1.48	.234
7705	.3159	.0058	.3159	.0105	.0058	.0046				.0257	.0198	.0058	.0003	.0002	.0001				1.15	.155
7706	.4095	.1989	.2106	.0070	.0011	.0070				.0152	.0046	.0105	.0001	.0001	.0001				1.42	.098
7707	.8658	.4797	.3861	.0081	.0023	.0058				.0339	.0245	.0093	.0004	.0003	.0001				1.32	.186
7708	2.5506	1.9890	.5616	.0011	.0011	.0011				.0479	.0105	.0374	.0003	.0001	.0002				.26	.028
7709	1.1934	.8892	.3042	.0222	.0198	.0023				.0538	.0456	.0081	.0001	.0001	.0001				1.10	.117
7710	1.2753	.9477	.3276	.0304	.0269	.0035				.0842	.0690	.0152	.0011	.0010	.0001					.113
7711																				.119
7712	.7605	.7605	.0585	.0374	.0339	.0035				.0830	.0783	.0046	.0014	.0012	.0001				1.11	.076
7801	1.0998	1.0296	.0702	.0351	.0315	.0035				.0947	.0877	.0070	.0017	.0016	.0001				2.20	.114
7802	1.3923	1.1817	.2106	.0409	.0386	.0023				.0783	.0725	.0058	.0022	.0022	.0001				1.91	.087
7803	1.0296	.7020	.3276	.0245	.0210	.0035				.0655	.0573	.0081	.0010	.0001	.0009				1.27	.095
7804	1.1700	.8775	.2925	.0292	.0245	.0046				.0631	.0538	.0093	.0012	.0011	.0001				1.97	.145
7805	1.2753	.9009	.3744	.0466	.0361	.0105				.0698	.0602	.0095	.0017	.0016	.0001				1.06	.064
7806	.2106	.0585	.2106	.0091	.0065	.0025				.0126	.0078	.0047	.0001	.0001	.0001				1.09	
7808																				.046
7809	.1989	.0585	.1989	.0106	.0090	.0016				.0331	.0297	.0033	.0002	.0002	.0001				1.02	.020

BUTLER PARK MONTHLY DATA

Date	Particulate			Lead			Copper			Zinc			Cadmium			Arsenic			Sulphation Index	Fluoridation Index
	Total mg/dm2/d	Soluble mg/dm2/d	Insoluble mg/dm2/d	Total mg/dm2/d	Soluble mg/dm2/d	Insoluble mg/dm2/d	Total mg/dm2/d	Soluble mg/dm2/d	Insoluble mg/dm2/d	Total mg/dm2/d	Soluble mg/dm2/d	Insoluble mg/dm2/d	Total mg/dm2/d	Soluble mg/dm2/d	Insoluble mg/dm2/d	Total mg/dm2/d	Soluble mg/dm2/d	Insoluble mg/dm2/d	mg/dm2/d	ug/cm2/d
7810	1.5795	1.3455	.2340	.0437	.0391	.0045				.1739	.1638	.0101	.0012	.0011	.0001				1.51	.068
7811	.8892	.7605	.1287	.0257	.0234	.0023				.0739	.0702	.0037	.0011	.0011	.0001				1.14	.030
7812	.4914	.4914	.0585	.0129	.0126	.0003				.0360	.0355	.0004	.0005	.0005	.0001				1.08	.033
7901	.9711	.9711	.0585	.0232	.0224	.0011				.0507	.0507	.0001	.0011	.0011	.0001				1.22	.028
7902	1.4859	1.2051	.2808	.0435	.0424	.0010				.1184	.1162	.0021	.0016	.0016	.0001				1.48	.036
7903	1.0062	.6435	.3627	.0404	.0361	.0043				.0547	.0473	.0073	.0010	.0009	.0001				1.55	.091
7904	1.4274	1.0764	.3510	.0267	.0223	.0044				.1074	.0983	.0090	.0009	.0008	.0001				1.45	.110
7905	1.0296	.4095	.6201	.0288	.0019	.0269				.1006	.0786	.0219	.0005	.0004	.0001				1.23	.108
7906																			1.39	.217
7907	3.3345	2.8899	.4446	.0145	.0002	.0142				.0210	.0017	.0193	.0002	.0001	.0002				1.16	.238
7908	3.8961	3.5685	.3276	.0188	.0120	.0067				.0532	.0460	.0071	.0007	.0007	.0001					.257
7909		.3861		.0285	.0278	.0007				.0613	.0609	.0003	.0008	.0008	.0001				1.15	
7910	3.0420	2.8197	.2223	.0256	.0203	.0052							.0018	.0017	.0001				.99	.051
7911	.4446	.3393	.1053	.0160	.0131	.0029				.0366	.0305	.0060	.0003	.0003	.0001				.96	.058
7912	.9945	.8424	.1521	.0714	.0645	.0069				.1113	.1029	.0084	.0014	.0014	.0001				.77	.036
8001	1.7550	1.5444	.2106	.1095	.1005	.0090				.1504	.1400	.0104	.0026	.0025	.0001				1.11	.037
8002	1.8720	1.7901	.0819	.0718	.0699	.0018				.1237	.1206	.0031	.0017	.0017	.0001				1.78	.080
8003	.8190	.6669	.1521	.0288	.0280	.0008				.0494	.0478	.0016	.0005	.0005	.0001				.99	.030
8004	1.8486	1.4508	.3978	.0697	.0638	.0058				.1002	.0933	.0069	.0019	.0019	.0001				1.49	.062
8005																				.028
8006	1.7433	1.2987	.4446	.0423	.0397	.0025				.0788	.0712	.0076	.0010	.0010	.0001				.98	.062
8007																			1.23	.048
8008	2.4219	2.2464	.1755	.0064	.0046	.0017				.0281	.0271	.0010	.0008	.0008	.0001				1.17	.052
8009	1.2987	1.0530	.2457	.0216	.0187	.0029				.0614	.0538	.0076	.0005	.0005	.0001				1.02	.041
8010	1.4859	1.0998	.3861	.0269	.0257	.0011				.0650	.0582	.0067	.0010	.0010	.0001				.87	.039
8011	.6552	.5733	.0819	.0200	.0175	.0024				.0602	.0551	.0051	.0008	.0008	.0001				.86	.021
8012	.9009	.9009	.0585	.0304	.0292	.0011				.0789	.0748	.0040	.0012	.0012	.0001				.73	.027
8101	1.1934	1.0413	.1521	.0267	.0245	.0022				.1030	.0981	.0049	.0024	.0024	.0001				2.47	.078
8102	2.1645	1.7901	.3744	.0487	.0456	.0031				.1125	.1030	.0094	.0019	.0018	.0001				.16	.015
8103	1.0647	.9360	.1287	.0321	.0304	.0017				.0558	.0522	.0035	.0012	.0012	.0001				1.36	.040
8104	.8541	.5616	.2925	.0162	.0145	.0017				.0320	.0274	.0045	.0007	.0007	.0001				1.26	.035
8105	1.3104	.9243	.3861	.0153	.0128	.0024				.0519	.0410	.0108	.0004	.0003	.0001				.91	.018
8106	.9828	.7605	.2223	.0146	.0128	.0017				.0384	.0336	.0047	.0004	.0003	.0001				.53	.013
8107	1.6614	1.2753	.3861	.0405	.0362	.0043				.0988	.0858	.0129	.0010	.0009	.0001				2.67	.114
8108	1.2285	.9945	.2340	.0278	.0248	.0030				.0484	.0424	.0059	.0007	.0007	.0001				1.61	.071
8109	1.6580	1.3310	.3269	.0454	.0407	.0047				.1214	.1064	.0151	.0018	.0017	.0001				1.36	.067
8110	1.4625	1.2402	.2223	.0396	.0328	.0067				.2204	.2074	.0129	.0018	.0017	.0001				1.97	.094
8111	1.0062	.9009	.1053	.0352	.0333	.0018				.0961	.0918	.0043	.0014	.0014	.0001				1.16	.058
8112	.7839	.6669	.1170	.0258	.0202	.0056				.1162	.1103	.0059	.0014	.0012	.0001					.038
8201	1.0530	.9009	.1521	.0329	.0313	.0016				.1446	.1426	.0019	.0022	.0022	.0001				.49	.034
8202	1.2168	.9009	.3159	.0561	.0498	.0063				.1233	.1136	.0097	.0023	.0022	.0001				.82	.038
8203	1.1817	.7956	.3861	.0338	.0298	.0039				.1028	.0898	.0129	.0010	.0009	.0001				1.60	

BUTLER PARK MONTHLY DATA

Date	Particulate Total mg/dm2/d	Particulate Soluble mg/dm2/d	Particulate Insoluble mg/dm2/d	Lead Total mg/dm2/d	Lead Soluble mg/dm2/d	Lead Insoluble mg/dm2/d	Copper Total mg/dm2/d	Copper Soluble mg/dm2/d	Copper Insoluble mg/dm2/d	Zinc Total mg/dm2/d	Zinc Soluble mg/dm2/d	Zinc Insoluble mg/dm2/d	Cadmium Total mg/dm2/d	Cadmium Soluble mg/dm2/d	Cadmium Insoluble mg/dm2/d	Arsenic Total mg/dm2/d	Arsenic Soluble mg/dm2/d	Arsenic Insoluble mg/dm2/d	Sulphation Index mg/dm2/d	Fluoridation Index ug/cm2/d
8205	1.9539	1.5912	.3627	.0362	.0324	.0038	.0025	.0010	.0015	.2504	.2269	.0235	.0024	.0023	.0001	.0011	.0009	.0002		
8206	1.4274	.9945	.4329	.0212	.0177	.0035			.0007	.0760	.0618	.0141	.0008	.0007	.0001	.0009	.0009	.0002	1.10	.076
8207																			.09	.005
8208	2.1411	1.6965	.4446																1.60	.034
8209	1.4274	1.1349	.2925	.0216	.0186	.0030	.0021	.0008	.0012	.0745	.0657	.0087	.0008	.0008	.0001	.0005	.0005	.0002	1.80	.064
8210	.9945	.9009	.0936	.0253	.0238	.0015	.0016	.0011	.0004	.1129	.1056	.0072	.0010	.0010	.0001	.0007	.0007	.0002	1.13	.053
8211	2.4336	2.1060	.3276	.0816	.0760	.0056	.0015	.0005	.0009	.3180	.3042	.0138	.0040	.0039	.0001	.0036	.0033	.0002	1.43	.055
8212	1.4391	1.2636	.1755	.0105	.0056	.0049	.0009	.0001	.0009	.1979	.1883	.0095	.0003	.0002	.0001	.0014	.0014	.0002	2.49	.048
8301	1.6263	1.4625	.1638	.0694	.0637	.0057	.0023	.0005	.0017	.2018	.1786	.0231	.0021	.0019	.0001	.0017	.0017	.0002	3.48	.067
8302	1.5444	1.3923	.1521	.0507	.0487	.0019	.0014	.0007	.0007	.2042	.1839	.0203	.0018	.0017	.0001	.0015	.0015	.0002	1.54	.056
8303	1.2753	1.2753	.0585	.0620	.0603	.0016	.0014	.0009	.0004	.1521	.1480	.0040	.0017	.0017	.0001	.0012	.0012	.0002	.90	.044
8304	1.1232	.9828	.1404	.0826	.0451	.0374	.0030	.0012	.0017	.1614	.1475	.0139	.0018	.0017	.0001	.0015	.0012	.0002	1.77	.050
8305	1.2051	.8892	.3159	.0321	.0106	.0215	.0021	.0003	.0017	.1379	.1178	.0201	.0012	.0011	.0001	.0010	.0006	.0003	.96	.040
8306	1.9539	1.7550	.1989	.0149	.0127	.0022	.0014	.0011	.0002	.0284	.0235	.0049	.0001	.0001	.0001	.0004	.0003		.49	.026
8307																			.97	.067
8308	3.4398	2.0709	1.3689		.0001			.0001			.0386			.0002			.0003			.019
8309	1.3455	1.2753	.0702	.0134	.0113	.0134	.0007	.0004	.0002	.1568	.1529	.0039	.0015	.0015	.0001	.0008	.0008			.040
8310	1.3689	1.1232	.2457	.0307	.0260	.0046	.0018	.0007	.0011	.1690	.1567	.0122	.0018	.0017	.0001	.0012	.0011	.0001	.70	.021
8311	1.6965	1.3806	.3159	.0555	.0501	.0053	.0019	.0012	.0007	.1888	.1743	.0145	.0025	.0024	.0001	.0020	.0018	.0001	.56	.031
8312	1.3104	1.1115	.1989	.0462	.0292	.0169	.0024	.0004	.0019	.2314	.2149	.0164	.0029	.0026	.0002	.0025	.0020	.0005	1.19	.020
8401	.6669	.4212	.2457	.0154	.0117	.0037	.0011	.0004	.0007	.0528	.0468	.0060	.0005	.0005	.0001	.0007	.0005	.0001	.70	
8402	1.5678	1.4274	.1404	.0339	.0324	.0015	.0012	.0009	.0003	.2351	.2315	.0036	.0017	.0017	.0001	.0007	.0007		.78	
8403																				.009
8404	.9360	.7839	.1521	.0348	.0326	.0022	.0019	.0014	.0005	.0920	.0835	.0085	.0016	.0015	.0001	.0015	.0014	.0001		.009
8405	1.2285	.9945	.2340	.0221	.0202	.0018	.0008	.0003	.0004	.0554	.0479	.0074	.0009	.0008	.0001	.0008	.0008			.005
8406	1.4391	1.1700	.2691	.0201	.0186	.0015	.0011	.0007	.0004	.0881	.0803	.0077	.0007	.0007	.0001	.0008	.0008		.66	.012
8407	4.1301	2.5740	1.5561	.0135	.0005	.0129	.0010	.0001	.0010	.0264	.0060	.0203	.0002	.0001	.0002	.0029	.0003	.0025	.89	.022
8408	2.0007	1.2168	.7839	.0177	.0001	.0177	.0014	.0003	.0010	.0904	.0480	.0423	.0004	.0001	.0003	.0008	.0005	.0003		.041
8409	2.1645	1.6146	.5499	.0124	.0017	.0106	.0008	.0001	.0008	.2534	.2402	.0132	.0001	.0001	.0001	.0001		.0001		.040
8410	.6786	.5148	.1638	.0128	.0117	.0011	.0009	.0005	.0003	.0505	.0455	.0050	.0005	.0005	.0001	.0011	.0047	.0006		.026
8411	1.7901	1.4274	.3627	.0299	.0081	.0217	.0023	.0003	.0019	.0625	.0430	.0195	.0008	.0005	.0002	.0030	.0026	.0003	1.05	.027
8412	.5733	.4680	.1053	.0153	.0117	.0036	.0008	.0003	.0004	.0545	.0508	.0036	.0008	.0008	.0001	.0010	.0008	.0001	.79	.036
8501	.0739	.4329	.1989	.0031	.0023	.0008	.0001	.0001	.0001	.0326	.0314	.0011	.0002	.0002	.0001	.0128	.0128		.41	.049
8502	1.8900	1.0600	.8300	.0366	.0360	.0006	.0017	.0017	.0001	.2560	.2550	.0011	.0025	.0025	.0001	.0014	.0014		.47	.005
8503	.9300	.6400	.2900	.0351	.0320	.0031	.0013	.0009	.0004	.0985	.0929	.0056	.0017	.0017	.0001	.0023	.0021	.0002	.40	.022
8504	1.2200	.6600	.5600	.0013	.0130	.0143	.0012	.0010	.0002	.0516	.0447	.0069	.0006	.0005	.0001	.0012	.0011	.0001	1.10	.069
8505	1.0000	.7800	.2200	.0162	.0120	.0042	.0008	.0005	.0003	.0808	.0746	.0062	.0009	.0009	.0001	.0012	.0011	.0002	1.60	.100
8506	1.4400	1.1600	.2800	.0089	.0040	.0049	.0012	.0006	.0006	.0771	.0708	.0063	.0010	.0010	.0001	.0013	.0012	.0001		.045
8507	3.1200	1.8700	1.2500	.0121	.0002	.0121	.0030	.0006	.0024	.0339	.0132	.0207	.0006	.0001	.0002	.0014	.0010	.0004	.81	.051
8508	3.9300	2.9200	1.0100	.0067	.0003	.0064	.0012	.0005	.0007	.0555	.0474	.0081	.0006	.0004	.0001	.0010	.0009	.0002	.83	.051
8509	.2000	.0500	.1500	.0083	.0060	.0023	.0011	.0005	.0006	.0258	.0191	.0067	.0005	.0004	.0001	.0006	.0004	.0002	1.57	.108
8510	.9100	.6000	.3100	.0231	.0210	.0021	.0014	.0008	.0006	.0812	.0758	.0054	.0013	.0013	.0001	.0018	.0015	.0002	.46	.035
8511	.6800	.3500	.3300	.0078	.0050	.0028	.0010	.0005	.0005	.0307	.0260	.0047	.0001		.0001	.0222	.0022	.0002	.86	.050
8512	.5000	.2700	.2300	.0063	.0049	.0014	.0030	.0002	.0001	.0248	.0241	.0007	.0006	.0005	.0001	.0005	.0005		.86	.049

MONTHLY DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
7509	.77	.66	.055
7510	.85	.76	.057
7511	.74	1.47	.021
7512	.86	.43	.021
7601	.88	1.42	.067
7602	.69	5.93	.079
7603	.69	5.60	.060
7604	.79	1.94	.095
7605	.32	2.81	.179
7606	.14	1.92	.138
7607	.49	2.71	.079
7608	.17	1.16	.020
7609	.60	2.56	.079
7610	.69	1.04	.081
7611	.46	1.56	.038
7612	.44	.50	.048
7701	.52	1.90	.039
7702	.86	2.10	.079
7703	.50	3.33	.079
7704	.63	1.90	.098
7705	.74	4.80	.111
7706	.72	2.26	.123
7707	.40	.43	.095
7708	.35	3.96	.039
7709	.84	3.33	.081
7710	.62	.40	.057
7711	.57		.041
7712	.34	2.63	.031
7801	.69	1.90	.039
7802	.87	1.83	.063
7803	.79	1.76	.099
7804	.57	2.00	.099
7805	.76	2.56	.065
7806	.72	2.23	.039
7807	.25	3.26	.019
7808	.34		.031
7809	.52	1.46	.019
7810	.99	1.56	.059
7811	.67	.90	.015
7812	.97	.70	.039
7901	.35	1.07	.020
7902	.90	2.03	.032
7903		1.60	.040

MONTHLY DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
7904	.56	2.23	.048
7905	.69	1.63	.060
7906	.64	3.57	.040
7907	.48	1.27	.079
7908	.87	.97	.040
7909	.85	2.30	.020
7910	.79	1.28	.016
7911	.73	1.50	.020
7912	.87	5.63	
8001	.77	6.57	
8002	.34	1.28	
8003	.96	2.44	.049
8004	.82	2.99	
8005	.50	2.53	.040
8007	1.14	1.51	.040
8008	.92	1.48	.060
8009	.84	1.48	.033
8010	.40	1.02	.020
8011	.68	1.19	.016
8012	.93	1.63	.019
8101	.93	1.63	.019
8102	.82	1.43	.041
8103	.69	1.74	.019
8104	.45	1.26	.049
8105	.65	1.35	.057
8106	.57	1.72	.061
8107	1.07	.97	.030
8108	1.03	2.50	.061
8109	.77	1.46	.076
8110	.67	2.70	.032
8111	1.03	1.15	.032
8112	.86	1.22	.032
8201	.74	1.39	.038
8202	.87	1.53	.036
8203		2.18	
8204	.57	1.67	
8205	.44	2.09	
8206	.80	1.68	.109
8207	.31	1.34	.024
8208	1.06	2.43	.097
8209	.75	1.22	.087
8210	.84	1.56	.054
8211	.96	1.43	.036
8212	.97	2.26	.058

MONTHLY DATA

WEST KOOTENAY POWER & LIGHT BUILDING

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
8301	.91	1.62	.054
8302	.59	1.48	.018
8303	.62	1.51	.072
8304	.57	2.24	.052
8305	.47	1.82	.037
8306	.39	1.66	.015
8307	.62	2.30	.036
8308	.15	1.16	.018
8309	.75	2.18	.029
8310	.89	2.02	.054
8311	.58	1.41	.054
8312	.45	1.75	.030
8401	.15	1.28	.035
8402	.59	.95	.036
8403	.19	1.55	.029
8404	.34	1.68	.072
8405	.45	1.50	.029
8406	.44	1.46	.036
8407	.19	1.77	.036
8408	.30	1.47	.043
8409	1.00	1.58	.036
8410	.66	.82	.036
8411	.32	2.39	.043
8412	.57	.87	
8501	.42	.67	.014
8502	.46	.94	.017
8503	.69	1.84	.036
8504	.31	1.90	.036
8505	.51	1.36	.058
8506	.26	1.09	.054
8507	.44	1.65	.054
8508	.57	1.20	.072
8509	.81	1.31	.054
8510	.55	.86	.029
8511	.46	.83	.036
8512	.57	.82	.018

MONTHLY DATA

WARFIELD SUBSTATION

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
7509	.31	.37	.076
7510	.23	.79	.063
7511	.48	.39	.028
7512	.46	.27	.026
7601	.38	2.81	.051
7602	.94	1.90	.060
7603	.59	2.43	.020
7604	.38	1.72	.048
7605	.05	2.23	.099
7606	.18	2.15	.060
7607	.19	2.67	.032
7608	.07	1.08	.020
7609	.27	2.15	.020
7610	.49	.74	.032
7611	.32	.87	.019
7612	.57	4.18	.032
7701	.45	1.56	.039
7702	.62	2.53	.039
7703	.25	3.46	.039
7704	.53	1.63	.049
7705	.58	1.33	.037
7706	.33	1.90	.041
7707	.32	2.10	.047
7708	.07	2.03	.019
7709	.45	2.00	.032
7710	.62	1.53	.038
7711	.42		.020
7712	.46	4.86	.015
7801	.67	1.63	.019
7802	.74	1.60	.031
7803	.45	2.13	.019
7804	.30	2.20	.019
7805	.63	3.33	.016
7806	.67	1.60	.019
7807	.12	.70	.019
7808	.22	.93	.015
7809	.45	.93	.019
7810	1.09	.66	.019
7811	.69	.56	.015
7812	.74	.33	.019
7901	.43	.43	.020
7902	.72	.60	.016
7903	.92	.47	.019

MONTHLY DATA

WARFIELD SUBSTATION

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
7904	.62	1.70	.032
7905	.55	2.50	.020
7906	.22	2.27	.020
7907	.67	1.27	.064
7908	.74	.69	.020
7909	.57	.75	.020
7910	.34	.57	.016
7911	.71	.70	.020
7912	.40	1.63	
8001	.45	1.53	
8002	.57	.65	
8003	.57	.94	.016
8004	.44	2.62	
8005	.43	1.14	.020
8007	.59	1.22	.020
8008	.67	1.07	.020
8009	.88	.88	.033
8010	.49	.54	.020
8011	.89	.92	.016
8012	.36	.34	
8101	.36	.34	
8102	.62	1.02	.020
8103	.44	.56	.019
8104	.39	.71	.016
8105	.55	.41	.019
8106	.47	1.60	.020
8107	.52	.54	.015
8108	.43	.97	.020
8109	.48	.72	.038
8110	.50	1.20	.016
8111	.45	.50	.016
8112	.55	.45	.016
8201	.60	.34	.019
8202	.91	.75	.018
8203	.48	.51	.018
8204	.53	.84	.014
8205	.68	.66	.036
8206	.57	.68	.018
8207	.01	.39	.012
8208	.53	1.41	.024
8209	.62	.88	.043
8210	.46	.60	.036
8211	.64	.49	.018
8212	.62	.56	.029

MONTHLY DATA

WARFIELD SUBSTATION

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
8301	.80	.60	.036
8302	.43	.32	.018
8303	.22	.48	.029
8304	.21	.71	.017
8305	.66	.70	.018
8306	.29	.90	.015
8307	.26	.99	.018
8308	.16	.71	.018
8309	.47	.71	.014
8310	1.03	.88	.018
8311	.29	.43	.036
8312	.26	.34	.015
8401	.37	.54	.017
8402	.50	.34	.036
8403	.28	.79	.014
8404	.29	.73	.054
8405	.47	.82	.014
8406	.37	.80	.018
8407	.37	1.17	.018
8408	.51	.61	.014
8409	.64	.63	.018
8410	.59	.39	.018
8411	.15	.63	.014
8412	.56	.43	.017
8501	.35	.39	.014
8502	.66	.41	.017
8503	.69	1.04	.018
8504	.47	.73	
8505	.44	.37	.029
8506	.36	.48	.018
8507	.34	.87	.036
8508	.51	.76	.029
8509	.66	.88	.018
8510	.49	.39	.014
8511	.57	.61	.018
8512	1.23	.41	.053

MONTHLY DATA

OASIS

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
7610	.43	.77	.065
7611	.97	.92	.119
7612	1.99	.95	.175
7701	1.29	1.70	.178
7702	1.49	1.00	.178
7703	.89	1.16	.119
7704	.36	1.06	.049
7705	.65	.83	.055
7706	.59	1.20	.041
7707	.24	1.96	.047
7708	.02	1.00	.019
7709	.49	1.30	.049
7710	.86	.96	.076
7711	.87	1.16	.061
7712	1.12	2.86	.063
7801	.94	.80	.079
7802	.93	.63	.063
7803	.57	.73	.039
7804	.42	.90	.059
7805	.55	2.83	.049
7806	.59	1.33	.039
7807	.10	.93	.019
7808	.34	1.33	.031
7809	.47	1.10	.019
7810	1.29	.83	.019
7811	2.12	.96	.047
7812	1.24	.40	.019
7901	.80	.80	.020
7902	1.05	.47	.032
7903	.97	.63	.040
7904	.36	1.07	.016
7905	.55	1.10	.020
7906	.15	1.83	.020
7907	.36	.60	.016
7908	.52	.30	.020
7909	.57	.63	.040
7910	.95	.62	.032
7911	2.10	.85	.040
7912	.77	1.10	
8001	1.02	1.93	
8002	1.22	.61	
8003	.61	.70	.016
8004	.59	1.53	

MONTHLY DATA

OASIS

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
8005	.55	1.90	.040
8007	.52	.32	.020
8009	.94	.97	.016
8010	1.22	.54	.040
8011	2.30	.99	.032
8012	.50	.20	.019
8101	.50	.20	.019
8102	.98	.48	.041
8103	.57	.36	.019
8104	.43	.74	.049
8105	.43	.36	.038
8106	.47	1.22	.061
8107	.46	.41	.015
8108	.34	.74	.020
8109	.38	.85	.038
8110	.27	1.12	.032
8111	.57	1.09	.032
8112	1.12	.59	.032
8201	1.32	.64	.038
8202	1.89	1.05	.054
8203	1.03	.44	.036
8204	.67	.73	.014
8205	.37	.71	.036
8206	.44	2.36	.018
8207	.04	.89	.012
8208	.29	.86	.024
8209	.49	.50	.029
8210	.68	.66	.036
8211	1.25	.53	.072
8212	1.19	.69	.029
8301	1.48	.87	.036
8302	.98	.58	.018
8303	.64	.48	.029
8304	.33	.78	.035
8305	.32	.66	.018
8306	.33	.63	.015
8307	.43	.92	.018
8308	.09	.60	.018
8309	.40	.54	.014
8310	.80	.85	.018
8311	.71	.70	.036
8312	.62	.84	.015
8401	.94	1.11	.035
8402	.90	.65	.072

MONTHLY DATA

OASIS

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
8403	.53	.61	.029
8404	.17	.82	.036
8405	.38	.71	.014
8406	.10	.65	.018
8407	.26	1.02	.018
8408	.46	.49	.014
8409	.64	.46	.018
8410	.88	.44	.018
8411	.44	4.32	.029
8412	.96	.73	.035
8501	.64	.41	.029
8502	.83	.46	.035
8503	.69	.48	.036
8504	.69	.40	.036
8505	.42	.48	.014
8506	.25	.70	.018
8507	.15	.61	.018
8508	.30	.60	.029
8509	.62	.70	.018
8510	.97	.98	.029
8511	1.09	.34	.018
8512	1.23	.41	.052

MONTHLY DATA

OASIS

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
8005	.55	1.90	.040
8007	.52	.32	.020
8009	.94	.97	.016
8010	1.22	.54	.040
8011	2.30	.99	.032
8012	.50	.20	.019
8101	.50	.20	.019
8102	.98	.48	.041
8103	.57	.36	.019
8104	.43	.74	.049
8105	.43	.36	.038
8106	.47	1.22	.061
8107	.46	.41	.015
8108	.34	.74	.020
8109	.38	.85	.038
8110	.27	1.12	.032
8111	.57	1.09	.032
8112	1.12	.59	.032
8201	1.32	.64	.038
8202	1.89	1.05	.054
8203	1.03	.44	.036
8204	.67	.73	.014
8205	.37	.71	.036
8206	.44	2.36	.018
8207	.04	.89	.012
8208	.29	.86	.024
8209	.49	.50	.029
8210	.68	.66	.036
8211	1.25	.53	.072
8212	1.19	.69	.029
8301	1.48	.87	.036
8302	.98	.58	.018
8303	.64	.48	.029
8304	.33	.78	.035
8305	.32	.66	.018
8306	.33	.63	.015
8307	.43	.92	.018
8308	.09	.60	.018
8309	.40	.54	.014
8310	.80	.85	.018
8311	.71	.70	.036
8312	.62	.84	.015
8401	.94	1.11	.035
8402	.90	.65	.072

MONTHLY DATA

OASIS

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
8403	.53	.61	.029
8404	.17	.82	.036
8405	.38	.71	.014
8406	.10	.65	.018
8407	.26	1.02	.018
8408	.46	.49	.014
8409	.64	.46	.018
8410	.88	.44	.018
8411	.44	4.32	.029
8412	.96	.73	.035
8501	.64	.41	.029
8502	.83	.46	.035
8503	.69	.48	.036
8504	.69	.40	.036
8505	.42	.48	.014
8506	.25	.70	.018
8507	.15	.61	.018
8508	.30	.60	.029
8509	.62	.70	.018
8510	.97	.98	.029
8511	1.09	.34	.018
8512	1.23	.41	.052

MONTHLY DATA

DANIEL ST.

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
7510			.063
7511	.67	1.03	.031
7512	.74	2.90	.028
7601	.78	1.50	.067
7602	.89	1.33	.099
7603	.69	1.20	.079
7604	.69	.90	.079
7605	.40	1.56	.178
7606	.52	2.23	.119
7607	.37	2.10	.079
7608	.20	1.20	.019
7609	.72	1.43	.076
7610	.72	.86	.067
7611	.51	.78	.038
7612	.42	.36	.031
7701	.47	1.10	.041
7702	1.15	1.63	.079
7703	.51	1.33	.061
7704	.55	1.20	.032
7705	.62	1.16	.092
7706	.64	1.66	.020
7707	.44	2.83	.095
7708	.27	1.13	.019
7709	.78	1.60	.049
7710	.67	1.33	.038
7711	.60	.76	.041
7712	.50	2.43	.015
7801	.84	1.43	.019
7802	.91	.83	.031
7803	.92	1.13	.079
7804	.50	1.20	.019
7805	.54	3.30	.015
7806	.51	1.50	.020
7807	.26	1.80	.019
7808	.32	1.56	.031
7809	.52	1.43	.019
7810	1.07	.96	.019
7811	.67	.46	.015
7812	1.04	.43	.019
7901	.77	1.90	.020
7902	.56	.90	.030
7903	.82	.73	.020
7904	.77	1.70	.016

MONTHLY DATA

DANIEL ST.

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
7905	.79	1.03	.040
7906	.69	2.83	.040
7907	.62	1.63	.032
7908	.45	.57	.040
7909	.87	2.07	.040
7910	.83	.77	.016
7911	.80	.83	.020
7912	.97	3.03	
8001	.94	1.03	
8002	.89	.31	
8003	.75	.04	.033
8004	.55	1.90	
8005	.54	1.39	.040
8007	.79	1.04	.040
8008	.27	1.28	.040
8009	.86	1.09	.016
8010	.64	.71	.020
8011	.89	1.22	.016
8012	1.13	.69	.019
8101	1.13	.69	.019
8102	.95	.65	.041
8103	1.04	.77	.019
8104	.47	.91	.033
8105	.57	.54	.038
8106	.49	1.33	.020
8107	.99	.61	.046
8108	.95	2.34	.061
8109	.96	1.54	.057
8110	.77	1.47	.032
8111	.81	.72	.016
8112	.98	.73	.016
8201	.77	.90	.019
8202	.96	.75	.018
8203	.73	.65	.018
8204	.53	.91	.014
8205	.87	1.26	.036
8206	.75	1.39	.036
8207	.25	1.34	.012
8208	1.28	2.20	.048
8209	.75	1.39	.043
8210	.87	1.51	.018
8211	1.09	.88	.036
8212	1.17	1.09	.043
8301	.77	1.05	.018

MONTHLY DATA

DANIEL ST.

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
8302		.66	.018
8303	.57	.87	.014
8304	.64	1.17	.035
8305	.34	.88	.018
8306	.28	.97	.015
8307	.50	1.31	.018
8308	.19	1.14	.018
8309	.71	1.12	.029
8310	1.00	1.16	.018
8311	.57	.95	.036
8312		.48	.014
8401	.20	.60	.018
8402	.69	.46	.036
8403	.40	1.16	.014
8404	.29	.95	.036
8405	.44	.78	.014
8406	.46	1.04	.036
8407	.53	1.90	.036
8408	.68	1.71	.029
8409	1.14	1.09	.018
8410	.78	1.07	.018
8411	.28	1.09	.014
8412	.72	.51	
8501	.57	.67	.014
8502	.71	.24	.017
8503	.80	.65	.036
8504	.50	1.29	.036
8505	.49	.80	.043
8506	.35	.88	.036
8507	.36	1.09	.036
8508	.63	1.12	.043
8509	.83	1.11	.036
8510	.72	1.02	.029
8511	.78	.44	.018
8512	.57	.43	.018

MONTHLY DATA

COLUMBIA GARDENS

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
7509	.39	.73	
7510	.64	3.16	.050
7511	.32	1.13	.028
7512	.65	.93	.027
7601	.48	1.20	.067
7602	.45	1.66	.079
7603	.35	4.66	.039
7604	.31	1.83	.046
7605	.27	3.26	.099
7606	.58	3.13	.059
7607	.18	2.96	.031
7608	.17	1.33	.019
7609	.48	2.06	.057
7610	.57	1.73	.081
7611	.57	1.74	.082
7612	.20	2.60	.031
7701	.27	5.10	.061
7702	.74	1.66	.079
7703	.36	1.76	.061
7704	.33	2.50	.065
7705	.32	1.10	.037
7706	.41	7.13	.041
7707	.18	2.50	.047
7708	.07	3.03	.019
7709	.39	2.93	.049
7710	.41	1.66	.057
7711	.52		.041
7712	.48	3.23	.047
7801	1.06	1.96	.079
7802	.95	3.20	.095
7803	.72	7.20	.079
7804	.35	5.43	.079
7805	.33	7.23	.032
7806	.35	3.33	.019
7807	.15		.019
7808	.24	1.33	.031
7809	.37	1.60	.019
7810	.52	1.36	.019
7811	.28	.66	.015
7812	.84	.46	.019
7901	.76	.47	.020
7902	.64	.50	.033
7903	.35	1.37	.020

MONTHLY DATA

COLUMBIA GARDENS

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
7904	.50	.80	.048
7905	.30	1.43	.020
7906	.30	.83	.020
7907	.38	.90	.016
7908	.60	.31	.020
7909	.47	2.07	.020
7910	.68	1.04	.016
7911	.67	.53	.020
7912	.81	1.67	
8001	1.44	2.50	
8002	.29	.46	
8003	.33	.57	.016
8004	.48	2.69	
8005	.27	1.63	.020
8007	.36	1.39	.020
8008	.28	1.24	.020
8009	.26	1.62	.016
8010	.45	.83	.020
8011	.99	.59	.016
8012	1.20	.90	.038
8101	1.20	.90	.038
8102	.87	.56	.021
8103	.07	.67	.019
8104	.35	.39	.016
8105	.28	.36	.019
8106	.34	1.38	.020
8107	.61	.54	.030
8108	.69	1.46	.041
8109	.45	1.16	.019
8110	.38	1.93	.032
8111	.77	.51	.032
8112	.60	.28	.032
8201	.86	.34	.019
8202	.43	.70	.018
8203	.59	.02	.018
8204	.34	.73	
8205	.45	.78	.018
8206	.52	.82	.018
8207	.14	.71	.012
8208	.73	1.75	.024
8209	.53	.78	.043
8210	.73	2.84	.018
8211	.64	.75	.036
8212	.58	.48	.043

MONTHLY DATA

COLUMBIA GARDENS

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
8301	.87	.56	.054
8302	.73	.60	.036
8303	.62	.45	.029
8304	.38	.61	.035
8305	.14	.92	.018
8306	.18	.64	.015
8307	.26	.90	.018
8308	.07	1.02	.018
8309	.47	1.29	.014
8310		1.60	.018
8311	.13	.37	.018
8312		.35	.030
8401	.11	.29	.017
8402	.47	.31	.036
8403	.14	.53	.014
8404	.11	1.11	.036
8405	.35	.64	.014
8406	.26	.75	.018
8407	.25	1.24	.018
8408		.56	.014
8409	.83	1.11	.018
8410	.27	.97	.018
8411	.35	.56	.029
8412	.41	.31	.017
8501	.57	.24	.014
8502	.55	.24	.017
8503	.37	.31	.018
8504	.30	.55	.018
8505	.42	.76	.029
8506	.24	.70	.018
8507	.25	1.96	.018
8508	.27	1.05	.014
8509	.50	.71	.018
8510	.37	2.22	.014
8511	.44	.26	.018
8512	.55	.38	.018

MONTHLY DATA

TRAIL HOSPITAL

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
7509	.36	1.16	
7510	.54	.83	.101
7511	.55	.56	.055
7512	1.25	.63	.053
7601	1.71	.70	.185
7602	.57	1.40	.218
7603	.74	2.43	.238
7604	.56	1.30	.174
7605	.27	1.40	.297
7606	.33	2.70	.268
7607	.22	2.20	.130
7608	.15	.70	.039
7609	.37	2.16	.119
7610	.49	.76	.196
7611	.28	.89	.134
7612	.36	.60	.095
7701	.47	.93	.119
7702	.67	1.23	.114
7703	.33	1.43	.144
7704	.39	1.00	.179
7705	.44	1.16	.166
7706	.46	1.30	.082
7707	.36	1.20	.238
7708	.26	.66	.119
7709	.40	1.20	.114
7710	.45	.93	.153
7711	.45	.93	.119
7712	.32	2.43	.098
7801	.55	.83	.099
7802	.72	.83	.142
7803	.50	1.23	.198
7804	.40	1.06	.198
7805	.48	2.30	.079
7806	.59	1.16	.041
7807	.20	1.23	.099
7808	.20	.90	.047
7809	.45	.90	.039
7810	.72	.86	.039
7811	.59	.56	.031
7812	.87	.50	.039
7901	.71	.33	.040
7902	.62	.53	.050
7903	.42	.50	.057

MONTHLY DATA

TRAIL HOSPITAL

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
7904		1.20	.016
7905	.45	1.23	.079
7906	.32	1.63	.086
7907	.24	1.00	.095
7908	.60	.57	.040
7909	.72	.92	.040
7910	.54	.59	.032
7911	.64	.44	.060
7912	.77	2.37	
8001	.52	1.47	
8002	.34	.61	
8003	.49	1.27	.049
8004	.38	.75	
8005	.38	1.51	.060
8007	.55	1.39	.060
8008	.37	1.04	.079
8009	.53	.76	.033
8010	.48	.70	.060
8011	.56	.62	.032
8012	.30	.56	.019
8101	.30	.56	.020
8102	.67	.69	.041
8103	.39	.61	.019
8104	.30	.95	.049
8105	.31	.69	.057
8106	.43	1.00	.020
8107	.63	.50	.061
8108	.62	.76	.061
8109	.60	.74	.095
8110	.57	1.01	.032
8111	.91	.80	.032
8112	.80	.56	.032
8201	.79	.54	.038
8202	.84	.88	.054
8203	.52	.75	
8204	.42	1.26	.043
8205	1.53	1.16	.054
8206	.66	.95	.054
8207	.17	1.01	.024
8208	.50	.73	.048
8209	.37	.48	.043
8210	.64	.75	.036
8211	.87	.73	.054
8212	.97	.82	.043

MONTHLY DATA

TRAIL HOSPITAL

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
8301	.87	.56	.054
8302	.39	.48	.018
8303	.36	.79	.043
8304	.40	1.34	.070
8305	.25	1.16	.018
8306	.26	1.05	.015
8307	.43	1.77	.018
8308	.03	1.43	.036
8309	.47	1.74	.029
8310	.82	1.79	.036
8311	.50	.61	.036
8312	.58	.98	.014
8401	.16	.77	.036
8402	.57	.58	.036
8403	.15	.91	.058
8404	.29	1.22	.072
8405	.40	1.22	.014
8406	.41	1.75	.054
8407	.46	2.14	.072
8408	.64	1.33	.058
8409	.90	1.24	.036
8410		1.02	.036
8411	.49	.75	.072
8412		.54	.017
8501	.38	.31	.029
8502	.40	.66	.035
8503	.44	1.34	.036
8504	.12	1.30	.056
8505	.42	1.39	.058
8506	.25	.94	.054
8507	.34	1.99	.072
8508	.49	1.62	.058
8509	.55	1.36	.036
8510	.32	.41	.029
8511	.27	.31	.018
8512	.50	.75	.035

MONTHLY DATA

SUNNINGDALE

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
7509	.36		
7510	.72		.076
7511	.14	1.76	.083
7512	1.39	3.76	.080
7601	1.31	.83	.101
7602	.12	1.96	.059
7603	.12	1.20	.039
7604	.23	1.33	.047
7605	.20	1.90	.079
7606	.12	1.80	.038
7607	.19	3.00	.016
7608	.15	.96	.019
7609	.12	.96	.019
7610	.19	.90	.033
7611	.46	1.09	.038
7612	.28	.36	.047
7701	.22	1.06	.039
7702	.31	1.30	.038
7703	.21	1.10	.020
7704	.22	1.73	.098
7705	.23	1.03	.037
7706	.21	1.46	.123
7707	.14	2.30	.031
7708	.05	.83	.019
7709	.21	1.10	.016
7710	.24	.73	.057
7711	.27	.80	.019
7712	.14	2.76	.032
7801	.42	.80	.039
7802	.48	.73	.063
7803	.27	1.06	.019
7804	.20	1.53	.079
7805	.28	1.96	.047
7806	.41	1.16	.020
7807	.07	.63	.039
7808	.14	1.13	.015
7809	.31	.73	.020
7810	.53	.70	.019
7811	.48	.50	.015
7812	.45	.43	.019
7901	.51	.53	.020
7902	.34	.83	.016
7903	.32	.87	.019

MONTHLY DATA

SUNNINGDALE

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
7904	.18	1.30	.016
7905	.32	1.43	.020
7906	.15	1.97	.020
7907	.71	.73	.016
7908	.27	.30	.020
7909	.20	.70	.020
7910	.30	.57	.016
7911	.32	.54	.020
7912	.28	1.40	
8001	.17	.40	
8002	.24	.48	
8003	.22	1.27	.016
8004	.21	2.14	
8005	.18	.94	.020
8007	.31	.73	.020
8008	.22	.71	.020
8009	.19	.66	.016
8010	.15	.41	.020
8011	.21	.39	.016
8012	.16	.53	.019
8101	.16	.53	.019
8102	.25	.46	.021
8103	.16	.48	.019
8104	.19	.53	.016
8105	.22	.31	.038
8106	.23	1.05	.041
8107	.28	.35	.015
8108	.28	1.71	.020
8109	.33	.79	.019
8110	.22	.49	.016
8111	.43	.59	.016
8112	.38	.49	.016
8201	.34	.48	.019
8202	.93	.63	.018
8203	.23	.60	.036
8204	.32	.95	.014
8205	.25	1.17	.018
8206	.35	1.12	.018
8207	.06	.57	.012
8208	.21	1.16	.024
8209	.21	.72	.014
8210	.30	.60	.018
8211	.78	.60	.036
8212	.44	.45	.029

MONTHLY DATA

SUNNINGDALE

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
8301	.46	.60	.018
8302	.19	.37	.018
8303	.14	1.01	.029
8304	.18	.75	.035
8305	.15	1.28	.018
8306	.14	1.02	.015
8307	.10	1.28	.018
8308	.03	1.60	.018
8309	.13	1.01	.014
8310	.17	.82	.018
8311	.22	.49	.036
8312	.24	.93	.014
8401	.13	.53	.018
8402	.21	.49	.036
8403	.14	.61	.029
8404	.08	.85	.036
8405	.23	.72	.014
8406	.17	.90	.018
8407	.13	1.21	.018
8408	.33	.86	.014
8409	.35	.88	.018
8410	.31	.58	.018
8411	.05	.53	.014
8412	.36	.75	.017
8501	.19	.38	.015
8502	.03	.31	.017
8503	.30	.66	.018
8504	.10	1.09	.018
8505	.18	.90	.029
8506	.15	1.02	.018
8507	.20	1.17	.018
8508	.28	1.17	.014
8509	.32	.98	.018
8510	.25	.50	.014
8511	.12	.34	.018
8512	.37	.57	.018

MONTHLY DATA

GLENMERRY

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
7509	.32	2.06	.059
7510	.32	2.20	.052
7511	.28	1.23	.019
7512	.44	.53	.019
7601	.34	.76	.084
7602	.45	2.50	.099
7603	.55	3.76	.079
7604	.38	1.56	.095
7605	.15	5.26	.158
7606	.26	1.86	.099
7607	.28	3.23	.063
7608	.25	1.80	.019
7609	.55	9.90	.079
7610	.61	1.76	.114
7612	.28	.36	.031
7701	.27	1.33	.079
7702	.62	1.13	.079
7703	.32	1.86	.079
7704	.45	4.83	.114
7705	.49	2.10	.092
7706	.64	1.83	.082
7707	.34	3.06	.079
7708	.07	1.86	.039
7709	.45	2.16	.032
7710	.62	1.90	.076
7711	.46		.041
7712	.33	2.20	.031
7801	.64	1.30	.059
7802	.62	1.00	.079
7803	.69	2.46	.099
7804	.45	1.36	.099
7805	.49	2.36	.049
7806	.50	.90	.019
7807	.22	2.23	.019
7808	.18	2.30	.015
7809	.40	1.43	.019
7810	.74	1.03	.019
7811	.44	.43	.015
7812	.97	.76	.019
7901	1.11	.50	.020
7902	.83	1.47	.032
7903	.52	1.27	.020
7904	.52	1.53	.048

MONTHLY DATA

GLENMERRY

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
7905	.32	3.97	.020
7906	.27	2.80	.020
7907	.28	1.03	.016
7908	.60	.69	.020
7909	.62	1.31	.040
7910	.54	1.60	.016
7911	.44	.68	.020
7912	.65	2.90	
8001	.60	3.17	
8002	.43	.63	
8003	.57	1.25	.049
8004	.44	3.28	
8005	.37	1.73	.040
8007	.52	1.26	.020
8008	.34	.94	.020
8009	.57	.76	.033
8010	.42	.76	.040
8011	.52	.87	.016
8012	.84	1.31	.019
8101	.84	1.31	.019
8102	.62	.88	.019
8103	.77	1.12	.062
8104	.21	.45	.019
8105	.32	.57	.038
8106	.34	.53	.041
8107	.67	.80	.015
8108	.67	1.92	.041
8109	.58	1.66	.057
8110	.50	1.08	.049
8111	.74	1.26	.016
8112	.57	.71	.016
8201	.62	1.00	.019
8202	.52	.88	.018
8203	.52	1.26	.054
8204	.31	1.47	.014
8205	.57	.94	.036
8206	.59	.58	.054
8207	.11	1.15	.012
8208	.79	7.87	.048
8209	.49	1.27	.043
8210	.71	.97	.036
8211	.71	1.07	.036
8212	.66	1.29	.043
8301	.68	.65	.036

MONTHLY DATA

GLENMERRY

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
8302	.36	.88	.018
8303	.44	.37	.058
8304	.40	1.36	.035
8305	.28	1.60	.018
8306	.24	1.35	.015
8307	.26	1.33	.036
8308	.19	1.14	.036
8309	.51	1.70	.029
8310	.80	1.19	.036
8311	.47	.73	.036
8312	.49	.94	.015
8401	.50	.92	.017
8402	.45	.49	.036
8403	.16	1.07	.029
8404	.22	1.58	.054
8405	.32	1.31	.014
8406	.38	.99	.036
8407	.47	1.72	.036
8408	.63	1.10	.029
8409	1.00	1.28	.054
8410	.52	.58	.036
8411	.20	.84	.029
8412	.48	.53	.017
8501	.38	.41	.014
8502	.33	.82	.017
8503	.41	.94	.018
8504	.39	.83	.018
8505	.49	1.16	.058
8506	.29	1.05	.036
8507	.42	2.64	.036
8508	.40	1.44	.043
8509	.78	1.63	.036
8510	.44	.65	.014
8511	.55	.56	.018
8512	.69	.44	.018

MONTHLY DATA

BIRCHBANK

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
7509	.12	1.53	
7510	.23	1.16	.050
7511	.45	1.40	.026
7512	.72	.46	.024
7601	.55	.56	.101
7602	.60	1.63	.099
7603	.45	2.60	.039
7604	.28	1.36	.031
7605	.05	1.96	.039
7606	.34	1.46	.019
7607	.09	1.86	.015
7608	.10	.70	.019
7609	.30	1.66	.020
7610	.18	1.06	.032
7611	.46	1.09	.038
7612	1.03	2.40	.079
7701	.74	1.53	.079
7702	.62	1.33	.079
7703	.36	1.70	.061
7704	.22	1.03	.015
7705	.23	.96	.018
7706	.18	1.30	.020
7707	.12	1.93	.015
7708	.02	1.23	.019
7709	.16	1.46	.016
7710	.29	1.36	.019
7711	.33		.020
7712	.37	3.43	.031
7801	.55	1.06	.059
7802	.52	.53	.047
7803	.25	1.86	.019
7804	.12	.70	.019
7805	.12	2.63	.016
7806	.20	1.33	.019
7807	.02	1.63	.019
7808	.12	1.56	.015
7809	.25	.63	.019
7810	.74	.56	.019
7811	.95	.36	.015
7812	.69	.20	.019
7901	.80	.40	.020
7902	.54	.17	.016
7903	.30	.17	.020

MONTHLY DATA

BIRCHBANK

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
7904	.14	.67	.032
7905	.15	.83	.020
7906	.02	1.37	.020
7907	.10	1.13	.016
7908	.20	.62	.020
7909	.17	.29	.020
7910	.40	.27	.016
7911	.71	.32	.020
7912	.32	.60	
8001	.37	1.13	
8002	.38	.46	
8003	.24	.15	.016
8004	.16	1.11	
8005	.10	.88	.020
8007	.20	.87	.020
8008	.15	.46	.020
8009	.32	1.01	.016
8010	.61	.61	.020
8011	.73	.45	.032
8012	.43	.76	.019
8101	.43	.76	.019
8102	.43	.33	.021
8103	.48	.15	.019
8104	.09	.45	.016
8105	.18	.28	.019
8106	.20	.70	.020
8107	.17	.38	.030
8108	.16	.46	.020
8109	.17	.41	.019
8110	.24	.92	.016
8111	.55	.45	.016
8112	.73	.36	.016
8201	1.05	.46	.019
8202	.73	.54	.018
8203	.34	.10	.018
8204	.27	.54	.014
8205	.16	.17	.018
8206	.23	.77	.018
8206	.02	.80	.012
8208	.18	.39	.024
8209	.19	.45	.029
8210	.28	.49	.018
8211	.55	.60	.018
8212	.57	.42	.043

MONTHLY DATA

BIRCHBANK

Date	Sulphation Index mg/dm2/day	Dustfall mg/dm2/day	Fluoridation Index ug/cm2/day
8301	.82	.27	.018
8302	.37	.27	.018
8303	.27	.15	.014
8304	.09	.29	.017
8305	.14	.43	.018
8306	.14	.45	.015
8307	.11	.85	.018
8308	.06	.46	.018
8309	.09	.39	.014
8310	.33	.44	.018
8311	.27	.68	.018
8312	.41	.20	.015
8401	.69	.51	.017
8402	.59	.22	.036
8403	.25	.22	.014
8404	.05	.34	.018
8405	.23	.45	.014
8406	.10	.36	.018
8407	.14	.63	.018
8408	.23	.20	.014
8409	.28	.49	.018
8410	.44	.26	.018
8411	.14	.42	.029
8412	.91	.22	.017
8501	.46	.12	.014
8502	.62	.22	.017
8503	.35	.17	.018
8504	.35	.32	.018
8505	.11	.42	.014
8506	.17	.46	.018
8507	.08	.29	.018
8508	.23	.48	.014
8509	.19	.82	.018
8510	.38	.27	.014
8511	.52	.26	.018
8512	.85	.31	.018

APPENDIX II - Stack Emission Data

This appendix presents the stack emission data used in the preceding report. Stack names, Cominco Ltd. file names, and SEAM site numbers are given below. The data are presented in the same order.

Stack Name	Cominco Ltd. file no.	SEAM site no.
Lead Sinter Machine Stack	S-1	0269101
Lead Blast Furnace and Drossing Stack	S-32	0269102
Lead Sinter Plant Wet Mix Dryer Stack	S-8	0269103
Lead Slag Furnace Baghouse Stack	S-40	0269104
Refinery Scrubber Stack	R-1A	0269136
Zinc Roaster Stack	Z-1	0269201
Zinc Melting Plant Stack	Z-36	0269211
Zinc Melting Plant Stack	Z-39	0269214
Zinc Melting Plant Stack	Z-40	0269215
Zinc Melting Plant Stack	Z-41	0269216
Zinc Melting Plant Stack	Z-41A	0260050
Zinc Melting Plant Stack	Z-43	0269218
Zinc Melting Plant Stack	Z-43A	0275005

STACK EMISSION DATA

LEAD SINTER MACHINE STACK; S-1

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Lead gr/SCF
7510	195 333	.0850	.0050
7511	213 503	.0600	.0050
7512	214 640	.0390	.0020
7601	207 800	.0810	.0110
7602	211 200	.0660	.0030
7603	210 100	.0250	.0020
7604	185 000	.0370	.0020
7605	183 000	.1500	.0060
7606	221 330	.0980	.0050
7607	207 278	.0950	.0100
7608			
7609	200 754	.1070	.0030
7610	199 800	.2270	.0070
7611	207 950	.1210	.0060
7612	205 700	.0230	.0050
7701	206 970	.0280	.0030
7702			
7703	195 480	.0260	.0010
7704	204 150	.2610	.0020
7705	186 000	.2060	.0020
7706	208 550	.1920	.0049
7707	204 230	.2820	.0020
7708			
7709	157 580	.2900	.0050
7710	195 960	.1850	.0001
7711	188 960	.2010	.0020
7712	195 950	.0570	.0020
7801	190 570	.0830	.0030
7802	216 000	.1750	.0020
7803	192 700	.0360	.0002
7804	208 000	.1410	.0006
7805	206 000	.0050	.0009
7806	178 000	.0060	.0003
7807	205 371	.1380	.0040
7808			
7809	212 746	.1560	.0080
7810	208 340	.1350	.0070
7811	213 730	.1300	.0240
7812	221 855	.1030	.0160
7901	214 113	.0460	.0082
7902	206 522	.2020	.0180
7903	186 875	.0470	.0039
7904	197 910	.0700	.0111

STACK EMISSION DATA

LEAD SINTER MACHINE STACK; S-1

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Lead gr/SCF
7905	195 700	.3010	.0037
7906	225 000	.4010	.0040
7907	190 390	.2480	.0097
7908	207 120	.1590	.0068
7909	190 830	.4210	.0050
7910	203 270	.2020	.0020
7911			
7912			
8001	206 738	.3710	.0110
8002	203 251	.1420	.0070
8003	202 611	.4170	.0060
8004	201 110	.2320	.0120
8005	208 333	.4520	.0090
8006	203 595	.0970	.0130
8007	191 885	.3530	.0030
8008	194 783	.2080	.0080
8009			
8010	196 000	.2670	.0050
8011	211 890	.2040	.0150
8012	200 420	.0830	.0030
8101	197 340	.1900	.0100
8102	203 700	.0920	.0080
8103	217 400	.0470	.0057
8104	212 600	.3120	.0160
8105	216 770	.3460	.0080
8106	220 850	.4250	.0170
8107	198 220	.1990	.0100
8108	202 620	.0910	.0130
8109	205 600	.1670	.0070
8110	188 900	.2670	.0060
8111	194 235	.2140	.0070
8112	201 835	.1870	.0100
8201	223 140	.0790	.0029
8202	226 690	.1130	.0080
8203	218 210	.1240	.0027
8204	205 740	.1560	.0130
8205	205 410	.1300	.0050
8206	135 870	.0990	.0050
8207			
8208	189 050	.2850	.0130
8209	208 965	.1840	.0260
8210	186 060	.3150	.0210
8211	213 460	.3000	.0220
8212	195 030	.1660	.0050

STACK EMISSION DATA

LEAD SINTER MACHINE STACK; S-1

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Lead gr/SCF
8301	203 130	.0860	.0070
8302	202 260	.0360	.0078
8303	190 320	.0950	.0090
8304	222 790	.1020	.0130
8305	204 340	.0870	.0039
8306	174 600	.0790	.0013
8307	158 440	.1420	.0040
8308			
8309	215 270	.1660	.0075
8310	156 160	.1160	.0090
8311	191 750	.1020	.0090
8312	192 875	.2050	.0060
8401	196 020	.0650	.0031
8402	212 770	.1870	.0040
8403	245 160	.0780	.0030
8404	100 130	.0750	.0028
8405	149 990	.1740	.0050
8406	204 800	.1900	.0165
8407	204 860	.1340	.0010
8408	132 540	.1090	.0020
8409	169 700	.1340	.0040
8410	139 790	.1420	.0027
8411	190 920	.2140	.0160
8412	188 650	.0240	.0160
8501	201 810	.0900	.0110
8502	212 630	.0880	.0062
8503	205 970	.1620	.0070
8504	202 450	.3030	.0060
8505	167 420	.1660	.0034
8506	200 000	.0960	.0024
8507	193 410	.0800	.0017
8508	142 260	.1700	.0024
8509	235 730	.1150	.0070
8510	159 640	.1110	.0050
8511	223 890	.1340	.0047
8512	225 200	.1330	.0028

STACK EMISSION DATA

LEAD BLAST FURNACE & DROSSING STACK; S-32

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Lead gr/SCF
7510	228 548	.0050	.0030
7511	236 000	.0090	.0040
7512	247 000	.0050	.0030
7601	228 000	.0070	.0040
7602	224 900	.0090	.0040
7603	232 935	.0080	.0030
7604	228 155	.0090	.0040
7605	241 450	.0120	.0050
7606	231 550	.0070	.0020
7607	229 958	.0860	.0030
7608			
7609	214 566	.0090	.0020
7610	225 825	.0070	.0030
7611	223 575	.0100	.0040
7612	243 180	.0070	.0040
7701	306 230	.0040	.0020
7702	299 880	.0060	.0029
7703	304 140	.0040	.0030
7704	309 000	.0070	.0030
7705	285 000	.0080	.0030
7706	259 000	.0070	.0030
7707	287 000	.0070	.0030
7708			
7709	264 000	.0070	.0030
7710	251 510	.0080	.0030
7711	271 411	.0050	.0020
7712	269 000	.0160	.0060
7801	272 000	.0060	.0030
7802	278 000	.0110	.0050
7803	287 700	.0070	.0020
7804	324 048	.0040	.0020
7805	329 000	.0050	.0020
7806	326 310	.0090	.0010
7807	283 845	.0060	.0010
7808			
7809	322 302	.0100	.0020
7810	314 100	.0070	.0020
7811	308 660	.0028	.0016
7812	335 730	.0094	.0023
7901	425 123	.0060	.0007
7902	401 995	.0140	.0030
7903	295 940	.0030	.0009
7904	317 160	.0050	.0006

STACK EMISSION DATA

LEAD BLAST FURNACE & DROSSING STACK; S-32

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Lead gr/SCF
7905	275 010	.0090	.0010
7906	357 470	.0050	.0010
7907	289 400	.0080	.0020
7908	301 340	.0110	.0030
7909	350 210	.0170	.0010
7910	312 970	.0240	.0050
7911			
7912			
8001	397 165	.0050	.0004
8002	378 164	.0110	.0030
8003	309 440	.0020	.0030
8004	264 530	.0040	.0050
8005	368 040	.0060	.0010
8006	316 645	.0060	.0030
8007	403 580	.0040	.0020
8008	310 210	.0090	.0010
8009	405 010	.0030	.0020
8010	426 135	.0060	.0030
8011	409 680	.0180	.0010
8012	415 115	.0090	.0010
8101	395 270	.0310	.0030
8102	322 230	.0027	.0010
8103	333 690	.0030	.0020
8104	319 230	.0048	.0012
8105	378 760	.0020	.0006
8106	309 970	.0050	.0010
8107	452 735	.0240	.0018
8108	315 565	.0040	.0010
8109	333 950	.0030	.0007
8110	397 529	.0033	.0006
8111	415 975	.0037	.0007
8112	370 590	.0080	.0007
8201	384 200	.0076	.0007
8202	358 060	.0025	.0005
8203	294 925	.0021	.0005
8204	381 820	.0055	.0017
8205	394 330	.0060	.0020
8206	365 180	.0090	.0020
8207			
8208	379 805	.0130	.0010
8209	422 990	.0085	.0030
8210	410 320	.0040	.0030
8211	390 540	.0050	.0030
8212	358 610	.0045	.0010

STACK EMISSION DATA

LEAD BLAST FURNACE & DROSSING STACK; S-32

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Lead gr/SCF
8301	327 320	.0040	.0030
8302	429 600	.0040	.0020
8303	405 810	.0030	.0010
8304	447 110	.0030	.0010
8305	397 810	.0030	.0010
8306	323 950	.0040	.0016
8307	400 055	.0040	.0010
8308			
8309	422 060	.0038	.0010
8310	427 740	.0023	.0007
8311	381 980	.0029	.0009
8312	416 589	.0014	.0008
8401	464 670	.0060	.0008
8402	421 970	.0040	.0006
8403	443 900	.0010	.0005
8404	466 720	.0015	.0009
8405	412 000	.0018	.0008
8406	350 910	.0048	.0017
8407	436 280	.0020	.0009
8408	436 050	.0009	.0007
8409	427 260	.0040	.0020
8410	463 130	.0037	.0017
8411	316 870	.0140	.0064
8412	345 000	.0075	.0016
8501	449 460	.0040	.0014
8502	430 730	.0040	.0010
8503	410 270	.0029	.0013
8504	411 060	.0031	.0013
8505	399 930	.0030	.0024
8506	405 080	.0048	.0018
8507	421 160	.0028	.0013
8508	441 750	.0026	.0011
8509	448 240	.0065	.0008
8510	427 780	.0040	.0010
8511	427 870	.0090	.0010
8512	454 760	.0200	.0010

STACK EMISSION DATA

LEAD SINTER PLANT WET MIX DYER STACK; S-8

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Lead gr/SCF
7510	80 321	.0230	.0140
7511	60 415	.0320	.0170
7512	85 206	.0410	.0160
7601	84 500	.0610	.0180
7602	85 100	.0170	.0060
7603	87 981	.0140	.0100
7604	66 091	.1420	.0390
7605	72 645	.0180	.0070
7606	81 360	.0140	.0050
7607	77 366	.0150	.0070
7608			
7609	45 105	.0570	.0230
7610	66 890	.0110	.0060
7611	83 855	.0080	.0030
7612	82 840	.0160	.0070
7701	84 520	.0390	.0150
7702	72 780	.0150	.0090
7703	71 440	.0200	.0060
7704	82 360	.0170	.0070
7705	76 850	.0190	.0060
7706	85 652	.0200	.0130
7707	89 200	.0220	.0130
7708			
7709	76 200	.0240	.0130
7710	85 390	.0300	.0180
7711	75 870	.0540	.0260
7712	90 837	.0140	.0050
7801	70 950	.0060	.0040
7802	73 149	.0380	.0090
7803	53 960	.0320	.0120
7804	89 850	.0710	.0380
7805	74 850	.0440	.0160
7806	88 006	.0430	.0140
7807	75 404	.0430	.0140
7808			
7809	84 599	.0100	.0050
7810	94 410	.0200	.0079
7811	85 470	.0530	.0180
7812	83 174	.0480	.0107
7901	90 155	.0420	.0060
7902	79 301	.0390	.0160
7903	82 730	.0230	.0030
7904	76 600	.0490	.0150

STACK EMISSION DATA

LEAD SINTER PLANT WET MIX DYER STACK; S-8

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Lead gr/SCF
7905	82 775	.0310	.0060
7906	75 780	.0290	.0110
7907	85 640	.0330	.0060
7908	98 150	.0500	.0075
7909	89 710	.0670	.0090
7910	82 200	.0870	.0190
7911			
7912			
8001	97 193	.0260	.0160
8002	78 152	.0290	.0070
8003	63 703	.1640	.0720
8004	85 145	.0360	.0090
8005	66 704	.0500	.0300
8006	81 233	.0640	.0200
8007	70 590	.0330	.0160
8008	90 466	.1030	.0120
8009	75 230	.0680	.0030
8010	87 645	.0710	.0150
8011	91 350	.0410	.0110
8012	86 260	.0470	.0140
8101	100 290	.0260	.0130
8102	70 600	.2450	.0750
8103	92 840	.0460	.0210
8104	86 310	.1160	.0500
8105	87 700	.0350	.0110
8106	100 110	.0360	.0120
8107	74 020	.0280	.0130
8108	90 235	.0370	.0190
8109			
8110	67 415	.0210	.0130
8111	92 530	.0320	.0200
8112	76 190	.0460	.0240
8201	82 310	.1180	.0400
8202	88 860	.0540	.0280
8203	87 095	.0390	.0150
8204	86 975	.0210	.0100
8205	83 385	.0320	.0150
8206	80 240	.0610	.0220
8207			
8208	83 890	.0320	.0010
8209	84 855	.0200	.0090
8210	82 840	.2920	.0120
8211	107 010	.0110	.0040
8212	56 090	.2060	.0120

STACK EMISSION DATA

LEAD SINTER PLANT WET MIX DYER STACK; S-8

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Lead gr/SCF
8301	52 260	.0800	.0340
8302	88 370	.0490	.0240
8303	70 400	.0530	.0270
8304	85 460	.0450	.0260
8305	79 610	.0450	.0230
8306	69 620	.0810	.0570
8307	76 150	.0500	.0310
8308			
8309	76 680	.0520	.0210
8310	97 420	.0190	.0080
8311	86 500	.0320	.0220
8312	89 450	.0190	.0095
8401	85 150	.0550	.0210
8402	101 585	.0610	.0240
8403	82 010	.0360	.0190
8404	86 100	.0330	.0190
8405	95 360	.0450	.0240
8406	78 750	.0370	.0190
8407	98 590	.0130	.0080
8408	93 280	.0200	.0098
8409	89 010	.0910	.0590
8410	92 180	.0270	.0160
8411	95 850	.0060	.0040
8412	77 580	.0220	.0150
8501	75 470	.1000	.0410
8502	87 840	.0110	.0060
8503	92 760	.0190	.0070
8504	53 630	.0290	.0130
8505	85 840	.0430	.0240
8506	89 400	.0130	.0088
8507			
8508	101 150	.0310	.0180
8509	94 850	.0860	.0170
8510	94 410	.0260	.0042
8511	93 960	.0430	.0190
8512	101 630	.0300	.0080

STACK EMISSION DATA

LEAD SLAG FURNACE BAGHOUSE STACK; S-40

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Lead gr/SCF	Total Zinc gr/SCF
7510	153 340	.0160	.0015	
7511	155 727	.0040	.0004	.0001
7512	158 786	.0200	.0004	.0017
7601	163 800	.0060	.0005	.0017
7602	162 300	.0050	.0006	.0027
7603	165 172	.0060	.0010	.0030
7604	177 710	.0180	.0030	.0080
7605	166 070	.0110	.0010	.0060
7606	144 355	.0060	.0020	.0040
7607	161 154	.0210	.0030	.0070
7608				
7609	165 741	.0060	.0010	.0020
7610	147 210	.0130	.0010	.0030
7611	141 920	.0060	.0010	.0040
7612	148 450	.0070	.0010	.0050
7701	155 280	.0040	.0010	.0010
7702	157 400	.0040	.0008	.0020
7703	142 930	.0020	.0002	.0020
7704	144 615	.0060	.0008	.0050
7705	145 130	.0037	.0005	.0020
7706	159 945	.0120	.0020	.0060
7707	135 800	.0060	.0005	.0040
7708				
7709	163 965	.0030	.0005	
7710	145 896	.0060	.0008	.0030
7711	152 635	.0100	.0020	.0050
7712	157 242	.0040	.0007	.0020
7801	146 020	.0050	.0010	.0030
7802	159 458	.0070	.0020	.0030
7803	142 540	.0030	.0006	.0020
7804	170 580	.0040	.0009	.0020
7805	167 800	.0040	.0007	.0020
7806	169 000	.0080	.0020	.0050
7807	154 210	.0030		.0020
7808				
7809	156 085			
7810	161 975	.0040		.0020
7811	154 220	.0075		.0039
7812	160 150	.0060		.0038
7901	157 880	.0080	.0020	.0040
7902	149 105	.0140	.0030	.0070
7903	169 280	.0070	.0020	.0050
7904				
7905	176 130	.0070	.0010	.0040

STACK EMISSION DATA

LEAD SLAG FURNACE BAGHOUSE STACK; S-40

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Lead gr/SCF	Total Zinc gr/SCF
7906	139 950	.0060	.0020	.0030
7907	128 370	.0110	.0030	.0050
7908	149 265	.0140	.0030	.0080
7909				
7910	147 380	.0180	.0050	.0100
7911				
7912				
8001	169 630	.0080	.0020	.0040
8002	156 500	.0130	.0030	.0060
8003	161 650	.0040	.0010	.0030
8004				
8005	176 630	.0050		.0040
8006	162 580	.0090	.0050	.0040
8007	161 910	.0070	.0020	.0040
8008	148 110	.0090	.0020	.0050
8009	174 210	.0090	.0020	
8010	180 600	.0050	.0020	.0020
8011	193 720	.0020	.0007	.0010
8012	154 205	.0030	.0004	.0010
8101	165 355	.0043	.0007	.0013
8102	168 985	.0016	.0003	.0011
8103	134 040	.0027	.0006	.0021
8104	103 605	.0170	.0020	.0040
8105	122 890	.0020	.0005	.0011
8106	156 090	.0040	.0008	.0020
8107	170 140	.0030	.0005	.0010
8108	194 240	.0013	.0004	.0011
8109	158 205	.0074	.0018	.0045
8110	172 750	.0076	.0017	.0050
8111	168 420	.0058		.0034
8112	195 770	.0048	.0008	.0028
8201	147 090	.0029		.0019
8202	185 665	.0040	.0010	.0020
8203	140 225	.0030		
8204	130 820	.0080	.0010	.0020
8205	139 740	.0050	.0010	.0040
8206	147 525	.0050	.0010	.0030
8207				
8208	149 395	.0050	.0010	.0030
8209	148 590	.0060	.0010	.0030
8210	157 260	.0060		.0030
8211	158 920	.0040	.0010	.0020
8212	164 930	.0030	.0010	.0020
8301	141 200	.0040	.0007	.0026

STACK EMISSION DATA

LEAD SLAG FURNACE BAGHOUSE STACK; S-40

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Lead gr/SCF	Total Zinc gr/SCF
8302	140 000	.0047	.0012	.0027
8303	192 020	.0040	.0008	.0030
8304	143 910	.0060	.0012	.0040
8305	164 020	.0048	.0013	.0024
8306	149 460	.0160	.0037	.0120
8307	140 200	.0160	.0030	.0110
8308				
8309	170 990	.0080	.0020	.0060
8310	150 385	.0056	.0010	.0030
8311	161 160	.0043	.0012	.0027
8312	130 000	.0055	.0010	.0028
8401	139 800	.0036	.0010	.0023
8402	174 630	.0035	.0009	.0023
8403	154 900	.0025	.0004	.0024
8404	181 410	.0046	.0008	.0043
8405	163 050	.0030	.0007	.0026
8406	146 200	.0039	.0010	.0024
8407	145 800	.0047	.0012	.0026
8408	139 100	.0080	.0015	.0050
8409	138 000	.0040	.0007	.0028
8410	138 320	.0014	.0003	.0009
8411	136 490		.0022	.0068
8412	149 000	.0029	.0028	
8501	157 000	.0080	.0028	.0040
8502	174 000	.0086	.0030	.0039
8503	178 000	.0057	.0011	.0038
8504	162 000	.0070	.0015	.0036
8505	179 000	.0060	.0050	.0040
8506	183 000	.0084	.0020	.0050
8507	177 000	.0110	.0016	.0056
8508	159 000	.0063	.0015	.0044
8509	176 000	.0077	.0011	.0046
8510	176 000	.0040	.0010	.0030
8511	176 000		.0005	.0010
8512	183 000	.0070	.0010	.0040

STACK EMISSION DATA

REFINERY SCRUBBER STACK; R-1A

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Lead gr/SCF	Total Arsenic gr/SCF	Total Antimony gr/SCF	Gaseous Fluoride PPM
8001						
8002						
8003	106 752	.0100	.0020	.0007	.0002	5.96
8004						
8005	124 160	.0070	.0010	.0020	.0030	2.39
8006	107 821	.0030	.0007	.0005	.0005	.32
8007	134 096	.0050	.0007	.0020	.0010	.57
8008	106 942	.0170	.0020	.0003	.0001	2.79
8009	140 060	.0140	.0010	.0030	.0004	1.03
8010	132 870	.0250	.0010	.0030	.0030	.21
8011	146 640	.0450	.0008	.0020	.0001	1.75
8012	126 620	.0150	.0008	.0010	.0002	.10
8101	131 900	.0330	.0014	.0156	.0036	4.76
8102	118 860	.0220	.0024	.0033	.0007	5.35
8103	129 980	.0200	.0015	.0080	.0025	2.62
8104	131 740	.0230	.0047	.0054	.0010	4.65
8105	115 220	.0190	.0009	.0006	.0015	.19
8106	93 270	.0290	.0008	.0006	.0015	.22
8107	136 125		.0009	.0015	.0011	2.39
8108	145 900	.0220	.0023	.0035	.0014	2.17
8109	122 410	.0770	.0006	.0030		16.98
8110	118 640	.0340	.0020	.0129	.0016	10.04
8111	121 730	.0260	.0020	.0060	.0013	8.07
8112	109 030	.0410	.0026			24.58
8201	122 460	.0300	.0009	.0130	.0005	15.60
8202	109 730	.0110	.0002	.0020	.0002	.29
8203	125 680	.0157	.0018	.0035	.0006	2.37
8204	92 845	.0320	.0010	.0060	.0020	.60
8205	119 410	.0080	.0010	.0020	.0010	.20
8206	119 930	.0170	.0010	.0070	.0030	4.50
8207						
8208	131 340	.0200	.0010	.0010	.0040	1.80
8209	119 210	.0130	.0030	.0010	.0020	.80
8210	115 940	.0210	.0010	.0090	.0040	12.00
8211	128 100	.0210	.0010	.0050	.0010	10.80
8212	103 360	.0020	.0010	.0010	.0010	2.50
8301	123 720	.0060	.0005	.0010	.0003	1.81
8302	120 890	.0150	.0013	.0050	.0003	24.64
8303	126 330	.0040	.0009	.0002	.0005	.37
8304	125 465	.0140	.0026	.0027	.0014	.14
8305	136 120	.0090	.0007	.0015	.0016	.38
8306	113 410	.0140	.0008	.0046	.0020	7.02
8307	115 580	.0047	.0003	.0007	.0006	.24
8308						
8309	118 300	.0140	.0013	.0045	.0001	8.79
8310	151 700	.0060	.0010	.0023	.0004	1.62

STACK EMISSION DATA

REFINERY SCRUBBER STACK; R-1A

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Lead gr/SCF	Total Arsenic gr/SCF	Total Antimony gr/SCF	Gaseous Fluoride PPM
8311	120 420	.0230	.0020	.0090	.0026	21.86
8312	111 275	.0120	.0012	.0040	.0014	13.65
8401	122 940	.0130	.0014	.0023	.0077	9.12
8402	137 450	.0070	.0007	.0008	.0001	4.67
8403	109 790	.0060	.0002	.0012	.0002	.79
8404	102 170	.0120	.0007	.0032	.0030	.21
8405	122 160	.0170	.0004	.0060	.0005	1.49
8406	114 660	.0170	.0013	.0030	.0030	.18
8407	121 470	.0080	.0007	.0025	.0005	6.05
8408	115 370	.0090	.0001	.0008	.0004	.13
8409	117 880	.0200	.0008	.0017	.0002	1.10
8410	114 270	.0200	.0020	.0027	.0020	3.63
8411	125 620	.0060	.0004	.0014	.0015	2.76
8412	128 410	.0087	.0011	.0034	.0005	17.59
8501	121 980	.0140	.0005	.0064	.0020	11.77
8502	114 230	.0190	.0013	.0032	.0020	7.29
8503	108 620	.0190	.0005	.0037	.0020	3.30
8504	111 740	.0200	.0013	.0048	.0014	2.10
8505	119 380	.0210	.0020	.0011	.0020	.74
8506	119 510	.0180	.0030	.0034	.0003	.34
8507	118 170	.0200	.0010	.0035		.10
8508	138 150	.0200	.0005	.0025	.0014	.07
8509	107 540	.0200	.0011	.0026	.0020	1.15
8510	126 530	.0054	.0002	.0037	.0010	.77
8511	124 460	.0200	.0005	.0079	.0010	6.09
8512	134 070	.0140	.0006	.0029	.0005	.19

STACK EMISSION DATA

ZINC ROASTER STACK; Z-1

Date	Discharge Volume SCFM	Total Particulate gr/SCF
7510	113 743	.0050
7511	107 815	.0010
7512	103 295	.0060
7601	112 700	.0220
7602	115 600	.0650
7603	149 410	.0010
7604	132 150	.0060
7605	124 800	.0140
7606	155 180	.0200
7607	182 152	.0430
7608		
7609	109 220	.0250
7610	93 680	.0300
7611	115 450	.0250
7612	157 790	
7701	102 500	.0090
7702	130 200	.0090
7703	144 400	.0510
7704	127 320	.0110
7705	141 820	.0110
7706	125 300	.0120
7707	134 290	.0100
7708		
7709	121 660	.0270
7710	94 150	.0040
7711	119 757	.0590
7712	103 950	.0290
7801	116 930	.0040
7802	126 225	.0900
7803	124 280	.0020
7804	110 700	.0170
7805	129 373	.0830
7806	122 130	
7807	117 260	.0170
7808		
7809	129 285	.0060
7810	128 120	.0020
7811	131 253	.0180
7812	145 160	.0150
7901	129 722	.0090
7902	122 070	.0090
7903	118 890	.0350
7904	103 010	.0040
7905	122 950	.0070

STACK EMISSION DATA

ZINC ROASTER STACK; Z-1

Date	Discharge Volume SCFM	Total Particulate gr/SCF
7906	126 700	.0410
7907	102 910	.0020
7908	93 290	.0200
7909	140 470	.0300
7910	136 430	.0070
7911	122 095	.0030
7912	96 510	.0030
8001	128 210	.0540
8002	104 392	.0130
8003	95 880	.0190
8004	127 240	.0120
8005	124 640	.1670
8006	133 431	.0250
8007	133 301	.0200
8008	118 770	.0080
8009	86 300	.0040
8010	135 266	.0060
8011	135 320	.0250
8012	135 260	.0450
8101	121 277	
8102	130 300	.0100
8103	91 845	.1440
8104	101 490	.0500
8105	125 365	.1920
8106	133 800	.0040
8107	115 060	.0050
8108	116 460	.0230
8109	121 600	.1080
8110	107 860	.0020
8111	129 285	.0720
8112	124 060	.0177
8201	136 055	.0067
8202	135 380	.0240
8203	112 130	.1070
8204	116 455	.0740
8205	131 970	.1620
8206	126 410	.1950
8207		
8208	114 920	.0330
8209	110 700	.0200
8210	132 935	.2250
8211	124 770	.0880
8212	121 240	.0450
8301	101 660	.0030

STACK EMISSION DATA

ZINC ROASTER STACK; Z-1

Date	Discharge Volume SCFM	Total Particulate gr/SCF
8302	129 120	.0050
8303	121 100	.0510
8304	119 830	.1530
8305	127 680	.0230
8306	123 730	.0530
8307	129 900	.1140
8308		
8309	96 250	.0960
8310	77 215	.1760
8311	98 640	.0070
8312	88 255	.0070
8401	84 560	.0067
8402	117 880	.0110
8403	114 980	.0040
8404	54 040	.0110
8405	95 785	.0080
8406	77 830	.0090
8407	109 820	.0260
8408	133 700	.0330
8409	130 380	.0098
8410	134 900	.0100
8411	120 510	.0070
8412	129 060	.0730
8501	127 030	.0570
8502	122 230	.0080
8503	104 700	.0060
8504	103 940	.0420
8505	130 360	.0040
8506	99 080	.0060
8507	89 070	.0120
8508	110 090	.0190
8509	84 950	.0160
8510	121 720	.0080
8511	125 240	.0240
8512	54 680	.0420

STACK EMISSION DATA

ZINC MELTING PLANT STACK; Z-36

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Zinc gr/SCF	Total Cadmium gr/SCF
7601	782	.0610	.0310	.0010
7604	1 595	.0160	.0090	.0005
7607	1 480	.0120	.0030	.0008
7612	1 399	.0030	.0020	.0010
7701	1 245	.0010	.0010	.0010
7705	1 540	.0010	.0010	.0010
7709	1 625	.0130	.0060	.0010
7710	1 385	.0090	.0050	.0001
7802	1 195	.0220	.0140	.0002
7805	1 537	.0070	.0030	.0001
7807	1 404	.0010	.0006	.0001
7810	1 230	.0006	.0005	.0001
7903	1 510	.0009	.0003	.0001
7906	1 048	.0008	.0004	.0001
7908	1 240	.0006	.0001	.0001
7910	1 236	.0008	.0007	.0001
8001	1 330	.0003		
8005	1 140	.0040		
8006	1 050	.0008		
8012	823	.0030		
8102	763	.0057	.0032	.0001
8104	760	.0030	.0020	.0001
8110	595	.0010	.0001	.0001
8203	865	.0040	.0020	.0003
8205	746	.0030	.0010	.0040
8209	820	.0010	.0010	.0010
8210	700	.0010	.0010	.0010
8301	722	.0015	.0014	.0001

STACK EMISSION DATA

ZINC MELTING PLANT STACK; Z-39

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Zinc gr/SCF
7511	15 647	.0160	
7602	11 034	.0170	.0070
7604	12 400	.0100	.0040
7609	8 230	.0170	.0060
7609	11 572	.0060	.0020
7702	8 445	.0260	.0100
7705	10 520	.0290	.0150
7709	8 230	.0170	.0060
7712	12 620	.0030	.0010
7802	12 380	.0300	.0100
7806	12 910	.0130	.0050
7809	11 840	.0520	.0200
7812	13 072	.0450	.0130
7902	15 290	.0320	.0100
7904	13 260	.0220	.0050
7908	11 660	.0400	.0070
7911	10 620	.0270	.0120
8003	13 300	.0360	.0110
8005	12 090		
8007	12 200	.0320	.0070
8012	10 840	.0350	.0110
8103	9 840	.0460	.0140
8106	12 830		.0050
8109	11 445	.0230	.0030
8112	9 520	.0080	.0050
8202	13 280	.0270	.0100
8206	11 390	.0260	.0070
8209	11 020	.0260	.0090
8212	12 775	.0260	.0110
8303	15 070	.0490	.0260
8307	16 400	.0530	.0370
8311	12 060	.0360	.0190
8403	13 635	.0500	.0230
8404	13 340	.0620	.0320

STACK EMISSION DATA

ZINC MELTING PLANT STACK; Z-39

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Zinc gr/SCF
8407	16 680	.0110	.0055
8501	16 000	.0480	.0140

STACK EMISSION DATA

ZINC MELTING PLANT STACK; Z-40

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Zinc gr/SCF
7511	9 167	.0120	
7601	9 018	.0100	.0040
7604	7 710	.0360	.0130
7607	12 380	.0290	.0020
7612			
7701			
7704	22 570	.0030	.0020
7709	18 555	.0160	.0080
7711	18 980	.0080	.0020
7801	21 060	.0170	.0050
7806	17 230	.0130	.0040
7809	18 605	.0160	.0060
7812	18 700	.0280	.0087
7902	23 810	.0140	.0060
7906	20 495	.0150	.0040
7908	10 810	.0320	.0050
8003	18 333	.0140	.0040
8103	11 770	.0200	.0120
8106	21 530	.0070	.0035
8109	16 610	.0160	.0030
8112	21 730	.0070	.0030
8202	22 000	.0170	.0083

STACK EMISSION DATA

ZINC MELTING PLANT STACK; Z-41

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Zinc gr/SCF
7511			
7603	8 000	.0080	.0030
7605	7 605	.0070	.0020
7609	7 550	.0320	.0050
7611	7 275	.0190	.0070
7701	6 732	.0050	.0020
7706	7 740	.0210	.0110
7709			
7711			
7801			
7806			
7809			
7909	8 860	.0210	.0070
8009	6 270	.0110	.0060
8011	6 790	.0110	.0030
8103	7 090	.0210	.0100
8106	6 400	.0210	.0160
8109	5 490	.0052	.0005
8112	6 560	.0110	.0100
8303	4 830	.0270	.0130
8311	7 865	.0300	.0100

STACK EMISSION DATA

ZINC MELTING PLANT STACK; Z-41A

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Zinc gr/SCF
7511	7 361	.0210	
7601	7 463	.0090	.0040
7605	7 420	.0230	.0070
7609	6 510	.0020	.0050
7612	6 780	.0020	.0010
7702	5 460	.0270	.0090
7705	6 940	.0500	.0150
7709	7 380	.0140	.0080
7711			
7803	8 290	.0160	.0070
7806	7 260	.0600	.0100
7809			
7810	6 550	.0260	.0098
7902	6 970	.0170	.0070
7909	9 040	.0300	.0080
8005	6 960	.0160	.0080
8006	6 270	.0100	.0040
8012	7 050	.0200	.0080
8103	6 535	.0320	.0160
8106	6 285	.1280	.0020
8109	6 660	.0230	.0042
8112	6 020	.0180	.0140
8212	5 730	.0240	.0100

STACK EMISSION DATA

ZINC MELTING PLANT STACK; Z-43

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Zinc gr/SCF
7602	5 880	.0100	.0080
7606	4 194	.0210	.0010
7607	5 280	.0590	.0230
7612	5 534	.0560	.0420
7702	4 700	.0380	.0200
7704	5 870	.0340	.0150
7709	5 485	.0650	.0240
7710	6 465	.0160	.0060
7802	5 675	.0450	.0240
7805	7 571	.1510	
7807	7 225	.0540	.0160
7812	6 620	.0270	.0100
7902	7 400	.0190	.0100
7905	6 520	.2190	.0600
7909	6 730	.0320	.0080
8003	6 000	.0420	.0140
8006	7 785	.0200	.0060
8009	7 460	.0320	.0100
8012	6 505	.0250	.0100
8101	7 200	.0370	.0210
8106	7 560	.0100	.0094
8109	6 335	.0040	.0110
8112	5 340	.0120	.0014
8201	5 280	.0014	.0006
8206	7 840	.0080	.0040
8212	8 630	.0870	.0080
8302	6 360	.0660	.0260
8306	8 055	.0360	.0180
8309	6 960	.0110	.0050
8312	6 660	.0990	.0350
8402	5 460	.0260	.0100
8403	6 207	.0380	.0120

STACK EMISSION DATA

ZINC MELTING PLANT STACK; Z-43A

Date	Discharge Volume SCFM	Total Particulate gr/SCF	Total Zinc gr/SCF
7902	7 200	.0460	.0200
7905	5 760	.0170	.0050
7909	2 905	.1420	.0440
8003	3 495	.0870	.0350
8006	5 510	.1480	.0470
8009	4 225	.0700	.0260
8012	7 790	.0700	.0230
8101	5 095	.0050	.0030
8106	3 895	.0054	.0050
8109	5 385	.0100	.0040
8112	3 190	.0200	.0070
8201	4 310	.3110	.1410
8206	5 465	.0100	.0070
8212	1 820	.0980	.0010
8302	4 100	.0170	.0070
8306	2 125	.0110	.0060
8309	3 130	.0100	.0040
8312	5 465	.0020	.0004
8402	5 690	.0150	.0060
8403	5 363	.0080	.0030

APPENDIX III - Ambient Sulphur Dioxide Control

June 12, 1985

This appendix presents an hourly profile through June 12, 1985- a day of an SO_2 excursion above permit levels. It shows the relationship between ambient monitors, stack emissions and control measures instigated.

The control measure guidelines followed by Cominco Ltd. are as follows:

1. When poor atmospheric conditions become evident, e.g. low winds and an inversion building, the Slag Furnace shift boss will be called and requested to change Slag Furnace operation to Waste Control Procedure.
2. If any remote SO_2 sensor values exceed 0.3 PPM (800 ug/m^3) for one hour, the Sinter Plant shift boss will be contacted and requested to change Sinter Plant operation to Waste Control Procedure. At this time the Waste Control Technician will call the Roaster Acid shift boss to notify Zinc operations regarding the change in Sinter Plant operation and elevated ambient air SO_2 levels. Zinc operations will be requested to maintain Zinc Stack SO_2 discharge levels as low as possible.

   When all autometers have recorded one hour less than 0.20 PPM SO_2 (530 ug/m^3), the Sinter Plant will be informed to resume normal operation.
3. If after four hours of Sinter Plant operation on Waste Control Procedure all sensors have not recorded less than 0.2 PPM (530 ug/m3) for one hour, the Sinter Plant will be shut down. The Waste Control Technician will inform J.D. McCunn that this action was required.
4. If after four hours with the Sinter Plant shut down all SO_2 sensors have not recorded less than 0.20 PPM (530 ug/m^3) for one hour, it will be necessary to further reduce the emission of SO_2 by shutting down No. 30 Roaster. The Waste Control Technician will inform J.D. McCunn that this action was required. At this time (eight hours after the Sinter Plant changed to Waste Control Procedure) the Waste Control Technician will conduct an Air Pollution Index Test at the ambient air station most affected.

5. When all SO_2 sensors have recorded less than 0.2. PPM (530 ug/m^3) for one hour, the resumption of operations would be normally performed in the reverse order from curtailment procedures.

6. Under adverse meteorological conditions, the expertise and judgement of the Waste Control Technician will be required to determine the stepwise startup procedures to ensure the air is capable of dispersing the increase in SO_2 and particulate matter.

Explanatory notes - Weather Conditions Table

i) Wind dir — an eight point ordinal direction indication, 1 is north and numbers proceed clockwise

ii) Dew Point — temperature at which water vapour will condense into droplets

iii) Hum — humidity

iv) Cloud Type — an indication of cloud cover: 1 is clear, 10 is full overcast

v) Vis — the distance visible with the naked eye

vi) Stack Index — a measure of plume opacity: 1 is clear, 10 is completely opaque

ZN - zinc roaster stack
D&L - lead blast furnace and drossing stack

vii) Diff — a three part descriptor of plume behaviour: LF-lofting, DD-down draft; an indication of relation to stack height - 1 = same height;an ordinal indicationof dispersion direction, as per Wind Dirc

Explanatory Notes (continued)

viii)	Accum	a two part descriptor of accumulation patterns: LT - light, MD- medium, HV- heavy; UP- upvalley, AL- all over, DN- down valley, FG- fog
ix)	Desc	a descriptor of cloud cover; PC-partly cloudy, MC-mostly cloudy, O-overcast, C- cloudy

Ambient Sulphur Dioxide Level Report Table

i)	PPHM	parts per hundred million

Stack Emissions Table

i)	SO_2	Sulpur dioxide level in the stack
ii)	Vol	Discharge volume in the stack
iii)	Temp	Temperature in the stack
iv)	S	Total sulphur emissions for the hour in tons

Weather Conditions Table

June 12, 1985

Observer: 07 - 17 AL

17 - 07 GW

Time of Sunrise : 04:42 AM 24 Hr. Rainfall : 000.00 mm. Degree days :2 C

Time of Sunset : 21:00 PM 24 Hr. Snowfall : 000.00 mm. Wind kilometres per day:20

Total hours of sunshine : 02:24 24 Hr. total precipitation : 000.00 mm.

Total possible hours of sunshine : 16:18

Ground Weather Conditions

Time	Wind Dir.	Wind Vel.	Temp.	Dew Point	Hum	Barometric Pressure	Cloud Type	Vis	Stack ZN	Index D&L	Diff	Accum	Desc	Plant Curtailment
hours		kmh	°C	°C	%	millibars		km						
1	5	5	18	8	52	957.0	5	5	5	8	LF18	LTUP	PC	
2	5	10	17	8	53	957.0	4	5	5	7	LF18	LTUP	PC	
3	4	8	17	8	53	956.3	8	5	6	7	LF18	LTUP	MC	
4	5	8	16	8	59	956.3	9	5	6	8	LF18	MDUP	MC	
5	5	6	16	9	61	956.3	9	8	6	8	LF18	MDUP	MC	0515 SLAG FURNACE AND W.C.P.
6	5	3	15	9	68	956.3	9	10	5	8	LF18	MDUP	C	
7	5	3	15	10	73	956.3	9	10	5	7	LF20	HVUP	O	
8	4	5	16	10	66	956.3	8	10	7	7	LF20	HVUP		0835 SLAG TO STRICT
9	4	3	19	12	66	955.6	9	8	6	3	LF20	HVAL		SINTER SHUTDOWN
10	7	3	20	11	57	955.0	9	8	7	0	LF20	HVDN		
11	4	5	21	12	58	954.6	8	8	8	0	LF27	HVAL		
12	4	10	23	12	52	953.9	7	10	6	0	LF18	MDUP		
13	4	13	26	12	42	952.9	7	10	6	0	LF18	LTUP		1250 SINT. TO START
14	4	11	28	11	35	952.6	8	10	5	7	LF11	LTUP	C	1455 SLAG TO NORMAL OPS.
15	1	10	27	12	40	952.3	10	10	6	7	DDO3	MDDN	C	
16	1	8	27	11	36	952.3	10	10	6	5	LF14	LTDN	C	1600 SINTER PLANT TO NORMAL OPS.
17	8	13	26	11	39	952.3	10	10	6	4	LF14	LTDN	C	
18	8	13	23	12	52	952.3	10	10	6	5	LF14	MDDN	C	

Weather Conditions Table

June 12, 1985 (Continued)

Ground Weather Conditions

Time	Wind Dir.	Wind Vel.	Temp.	Dew Point	Hum	Barometric Pressure	Cloud Type	Vis	Stack	Index	Diff	Accum	Desc	Plant Curtailment
hours		km/h	°C	°C	%	millibars		km	ZN	D&L				
19	8	13	22	12	53	951.9	10	10	6	6	LF14	MDDN	C	
20	8	10	21	12	58	951.6	10	8	6	6	LF14	MDDN	C	
21	8	14	20	11	57	951.2	10	5	6	7	LF14	MDDN	C	
22	8	13	20	11	57	951.2	10	5	6	7	LF14	MDDN	C	
23	8	10	20	11	57	951.2	10	5	6	7	LF14	MDDN	C	
24	8	10	19	11	60	951.2	10	5	6	7	LF14	MDDN	C	
AVG	5	8	20	10	54	953.9			6.2	5.8				
MAX		14	28						8	8				
MIN	3	15							5	0				

Ambient Sulphur Dioxide Level Report

June 12, 1985

Time	Birchbank	Oasis	Warfield Substation	West Kootenay Power & Light building	Glenmerry	Columbia Gardens
hr:min	PPBM	PPBM	PPBM	PPBM	PPBM	PPBM
00:30	0	2	0	5	0	0
01:00	0	3	0	2	0	0
01:30	0	7	0	1	0	0
02:00	0	9	0	1	0	0
02:30	0	8	1	0	0	0
03:00	0	9	1	0	0	0
03:30	0	10	2	0	0	0
04:00	0	7	2	0	0	0
04:30	0	7	7	0	0	0
05:00	0	9	12	0	0	0
05:30	0	8	28	2	0	0
06:00	0	8	32	2	0	0
06:30	0	6	30	3	0	0
07:00	0	10	28	2	0	0
07:30	0	10	36	1	0	0
08:00	0	16	30	2	0	0
08:30	0	17	30	21	14	0
09:00	0	15	32	100	6	0
09:30	0	10	100	84	9	0
10:00	0	8	41	56	27	0
10:30	0	4	31	74	37	26
11:00	0	4	20	70	14	14
11:30	0	3	30	19	7	2
12:00	0	10	8	7	4	0
12:30	0	10	4	3	1	0
13:00	0	5	2	1	0	0
13:30	0	5	0	0	0	0
14:00	0	1	0	0	0	0
14:30	0	0	0	0	0	0
15:00	0	0	1	0	0	0
15:30	0	0	1	0	0	0
16:00	0	0	1	1	1	0
16:30	0	0	0	1	1	1
17:00	0	0	0	2	1	1
17:30	0	0	0	7	1	0

Ambient Sulphur Dioxide Level Report (Continued)

June 12, 1985

Time	Birchbank	Oasis	Warfield Substation	West Kootenay Power & Light building	Glenmerry	Columbia Gardens
hr:min	PPHM	PPHM	PPHM	PPHM	PPHM	PPHM
18:00	0	0	0	2	8	3
18:30	0	0	0	4	36	17
19:00	0	0	0	3	21	30
19:30	0	0	0	1	11	18
20:00	0	0	0	1	19	13
20:30	0	0	0	1	8	11
21:00	0	0	0	2	6	13
21:30	0	0	0	1	8	11
22:00	0	0	0	2	6	13
22:30	0	0	0	1	3	5
23:00	0	0	0	1	3	5
23:30	0	0	0	1	1	6
24:00	0	0	0	1	3	5
AVG	.00	4.40	10.62	10.18	5.33	4.08
MAX	0	17	100	100	37	30

No. of 1 hour periods exceeding 30 PPHM/HR. Average

0	0	3	3	0	0

No. of 3 hour periods exceeding 30 PPHM/HR. average

0	0	5	3	0	0

No. of 24 hour periods exceeding 14 PPHM/HR. average

0	0	0	0	0	0

Stack Emission Table

June 12, 1985

	Lead Sinter Machine Stack				Lead Slag Furnace Baghouse Stack				Lead Blast Furnace and Drossing Stack				Zinc Roaster Stack			
Time Hour	SO_2 PPM	Vol SCFM	Temp °C	S Ton	SO_2 PPM	Vol SCFM	Temp °C	S Ton	SO_2 PPM	Vol SCFM	Temp °C	S Ton	SO_2 PPM	Vol SCFM	Temp °C	S Ton
1	500	433	78	.533	1800	163	78	.750	800	184	40	.376	275	100	36	.070
2	450	433	78	.526	1100	163	78	.458	800	184	40	.376	250	100	36	.064
3	450	433	78	.498	600	163	78	.250	750	184	40	.353	250	100	36	.064
4	400	433	78	.443	1800	163	78	.750	700	184	40	.329	250	100	36	.064
5	575	433	78	.636	400	163	78	.167	800	184	40	.376	250	100	36	.064
6	700	433	78	.775	1800	163	78	.750	800	184	40	.376	250	103	25	.066
7	450	433	78	.498	800	163	78	.333	800	184	40	.376	250	103	25	.066
8	350	433	78	.387	500	163	78	.208	1100	184	43	.517	250	103	25	.066
9	275	433	78	.304	1000	163	78	.417	950	184	45	.447	250	103	25	.066
10	500	433	78	.553	500	163	78	.208	0000	0000	40	.000	1500	103	25	.395
11	250	433	78	.277	900	163	78	.375	0000	0000	40	.000	1500	109	25	.418
12	100	433	78	.111	600	163	78	.250	0000	0000	40	.000	600	109	25	.167
13	100	433	78	.111	900	163	78	.375	0000	0000	40	.000	500	109	25	.139
14	300	433	78	.332	500	163	78	.208	75	123	45	.024	500	109	25	.139
15	250	433	78	.277	600	163	78	.250	50	123	45	.016	550	109	25	.153
16	125	433	78	.138	1200	163	78	.500	75	184	45	.035	625	109	25	.174
17	200	433	78	.221	2400	163	78	1.000	400	184	45	.188	600	109	25	.167
18	400	433	78	.443	300	163	78	.125	750	184	45	.353	600	108	25	.166
19	700	433	78	.775	2800	163	78	1.167	700	184	45	.329	600	108	25	.166
20	800	433	78	.885	500	163	78	.208	475	184	42	.223	500	108	25	.138
21	600	433	78	.664	1200	163	78	.500	500	184	37	.235	450	108	25	.124
22	250	433	78	.277	400	163	78	.167	950	184	36	.447	400	108	25	.110
23	50	433	78	.055	400	163	78	.167	875	184	35	.412	375	108	25	.104
24	50	433	78	.55	700	163	78	.292	875	184	36	.412	375	108	25	.104
Avg	368	433	78	.406	987	163	78	.411	661	177	41	.258	497	105	27	.135
Max	800	433	78	.885	2800	163	78	1.167	1100	184	45	.517	1500	109	36	.418
Min	50	433	78	.055	300	163	78	.125	50	123	35	.000	250	100	25	.064
Daily Accumulation				9.794				9.875				6.200				3.254